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AND

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GEORGE W. KOSMAK, M. D.

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41

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ORIGINAL COMMUNICATIONS.

THE TOLERANCE OF FRESHLY DELIVERED WOMEN TO EXCESSIVE LOSS OF BLOOD.*

BY

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SOME years ago I became impressed by the fact that many women may lose considerable quantities of blood during the third stage of labor or shortly thereafter without presenting any of the clinical symptoms which are generally regarded as characteristic of hemorrhage.

In order to test the correctness of my impression, I instructed my assistants to collect and measure the blood lost at that time as a matter of routine in every labor. As the number of observations increased, it became desirable to establish a standard for differentiating between physiological bleeding and actual hemorrhage, but upon referring to the accepted obstetrical text-books and to the monographs upon the third stage of labor, I was surprised by the lack of definite information upon the subject, as well as by the contradictory statements made by the various writers. Thus, in 1886 Barnes said: "It may be useful to acquire as accurate an idea as possible of what may be considered the natural loss of blood. This standard is very difficult to fix by quantity. Women vary greatly in this respect. Some lose very freely without appearing to be any the worse; whereas others cannot bear the loss of even a moderate amount without exhibiting alarming prostration. When

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*This article is also to appear in the "Osler Anniversary Volume."

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the uterus contracts normally, its substance is compressed, so that the blood in its vessels is squeezed out, much as we squeeze water out of a sponge. The quantity of blood so held in the uterus at the moment of separation of the placenta may be regarded as superfluous for the wants of the system. It may amount to 1 pound, but it is often less and occasionally more. This I call physiological hemorrhage."

While Barnes' statement is doubtless correct, it is nevertheless too broad to be useful in differentiating or indexing hundreds of observations. Nor are the estimates of other writers more helpful; as one will designate as normal a loss of blood which another would consider as a serious hemorrhage. The following figures show clearly the varying conceptions of physiological bleeding: Fabre 80 to 100 c.c., Tucker 300 c.c., Champneys 300 c.c., Commandeur 500 to 600 c.c., Tarnier and Chantreuil 600 to 700 c.c., and Ahlfeld 800 c.c.; while Polak begs the question by stating that hemorrhage did not occur in a series of 1306 consecutive labors. It must be apparent that many of these statements represent merely crude estimates, for, so far as I can gather, only the figures of Tucker and Ahlfeld are based upon actual measurements. Similar variations likewise exist in the notions as to what constitutes actual hemorrhage, its lower limit being placed at 300 and 1000 c.c. by Fabre and Ahlfeld, respectively.

The present study concerning the amount of blood lost during the third stage of labor and shortly thereafter and its clinical effects, is based upon observations made upon 1000 consecutive spontaneous full-term labors occurring in 1339 obstetrical patients at the Johns Hopkins Hospital (Histories 8161 to 9500). Three hundred and thirty-nine histories in the series were not utilized, as they included 162 operative cases, as well as 177 others in which pregnancy had terminated prematurely, or in which the patients left the hospital before delivery.

Our technic for collecting and measuring the blood is as follows: Immediately after the birth of the child a sterile douche pan is placed beneath the buttocks of the patient where it remains until all bleeding following the birth of the placenta has ceased. After the placenta has been delivered any blood contained within its membranes is allowed to escape into the pan; the entire amount is then poured into a graduate, accurately measured in cubic centimeters, and noted in the history. In this way contamination by amniotic fluid is avoided, and the entire amount of blood which has escaped during the third stage of labor and after the extrusion of the placenta is collected and measured. This technic is very simple and satisfactory and is preferable to that employed by Tucker and Ahlfeld—the former collecting the blood in a basin held before the external genitalia, and the latter employing a complicated procedure in which the patient's buttocks rest over the mouth of a large copper funnel, which passes through the mattress, while the blood is collected in a vessel placed beneath the bed.

Before considering our observations in detail, it seems advisable to say a few words concerning the treatment of the placental period of labor, as our method differs materially from that employed by Ahlfeld. As is well known, he advocates the greatest possible conconservatism, and holds that it results in a diminution in the amount of blood lost, as well as in prompter recovery of the patient. Immediately following the birth of the child, he cuts the cord and leaves the patient absolutely alone for two hours, unless excessive bleeding necessitates prompt expression or the placenta is extruded spontaneously, the latter occurring in only 13 per cent. of his cases. At the end of the period he expresses the placenta by gentle pressure upon the lower abdomen.

I have adopted a different procedure, which is as follows: After the child is born the uterus is gently palpated and the location of its fundus noted, but massage is not employed unless the uterus is boggy in consistency or the bleeding excessive. From time to time the location of the fundus is determined by palpation or inspection, and after the lapse of from five to thirty minutes it is usually noted that it has risen 4 to 6 cm. above its original location, while in some cases an indistinct swelling has likewise appeared just over the symphysis. This indicates that the placenta has become separated from its attachment, has been extruded from the uterine cavity and lies free in the lower uterine segment or upper part of the vagina. As Ahlfeld's observations have taught us that in seven cases out of eight the placenta will remain in this location until expressed by pressure from above, I have been unable to convince myself that there is any advantage in waiting a specified length of time before expressing it, and consequently, as soon as the rising up of the fundus indicates that it has been extruded from the uterine cavity, I express it from the vagina by gentle pressure upon the fundus. On the other hand, I believe that routine massage of the uterus only tends to disturb and prolong the process of separation, and should therefore be avoided; while premature attempts to express the unseparated placenta by the original Credé method frequently lead to retention of placental fragments and thus greatly increase the amount of bleeding and the frequency of radical intervention. Consequently, I employ the typical Credé method of expression with the greatest circumspection, and only in the presence of serious bleeding, or after spontaneous separation of the placenta has failed to occur within one hour after the birth of the child.

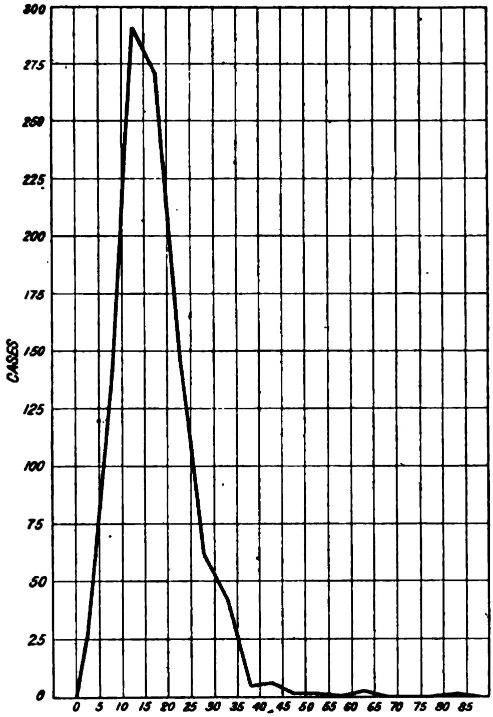

CHART 1.—Showing duration of placental period in 1000 consecutive spontaneous labors.

The following figures give a clear idea of our conduct of the third stage which is apparently justified by the results to which reference will later be made.

Placenta born spontaneously	9 cases
Placenta expressed from vagina	973 cases
Placenta expressed by typical Credé	18 cases
Placenta removed manually	0 case
	1000 cases

In the entire series the average time elapsing between the birth of the child and the extrusion of the placenta was 15.3 minutes, the extremes being spontaneous expulsion immediately following the birth of the child and a difficult Credé expression at the end of ninety minutes.

Chart I (Fig. 1) gives a graphic idea of the duration of the placental period in our series of cases, and shows that the most frequent time for delivery of the placenta is between 10 and 15 minutes after the birth of the child, or somewhat less than the arithmetic average.

Upon analyzing the amount of blood lost in our series of 1000 spontaneous labors, we find that the average bleeding was 343.7 c.c. with the extremes varying from zero to 2400 c.c., the placental period having been entirely bloodless in two patients. Table I gives the incidence of the varying loss of blood:

TABLE I.—SHOWING THE VARYING AMOUNT OF BLEEDING IN 1000 SPONTANEOUS LABORS.

Quantity of blood lost, c.c.	Cases
0	2
1– 99	88
100– 199	210
200– 296	227
300– 399	148
400– 499	120
500– 599	75
600– 699	31
700– 799	28
800– 899	15
900– 999	7
1000–1099	8
1100–1199	7
1200–1299	8
1300–1399	4
1400–1499	4
1500–1749	4
1750–1999	0
2000–2249	3
2250–2499	1

1000 cases, average 343.7 c.c.

It must not be understood, however, that this average loss gives a correct idea concerning the amount of the bleeding which one is most likely to encounter in spontaneous labor, as that amounted to less than 300 c.c. in 527 out of 1000 cases. This is still further accentuated by Chart II (Fig. 2), which graphically illustrates the conditions in our 1000 cases, and shows that the most usual loss varies between 100 and 300 c.c., and that the higher average for the series has resulted from the inclusion of the relatively rare cases of profuse hemorrhage.

These figures correspond approximately with those of Tucker and Champneys (300 to 360 c.c.) and are much smaller than those given by Commandeur, Tarnier and Chantreuil, and Ahlfeld (500–800 c.c.). In the last 2058 cases studied by Ahlfeld the average loss was 505.1 c.c., which is 161.4 c.c. or one-third greater then in our series. Whether this is fairly attributable to the difference in our management of the placental period, I hesitate to state; but in any event it can scarcely serve as an argument in support of the view that extreme conservatism necessarily leads to a pronounced diminution in the amount of bleeding.

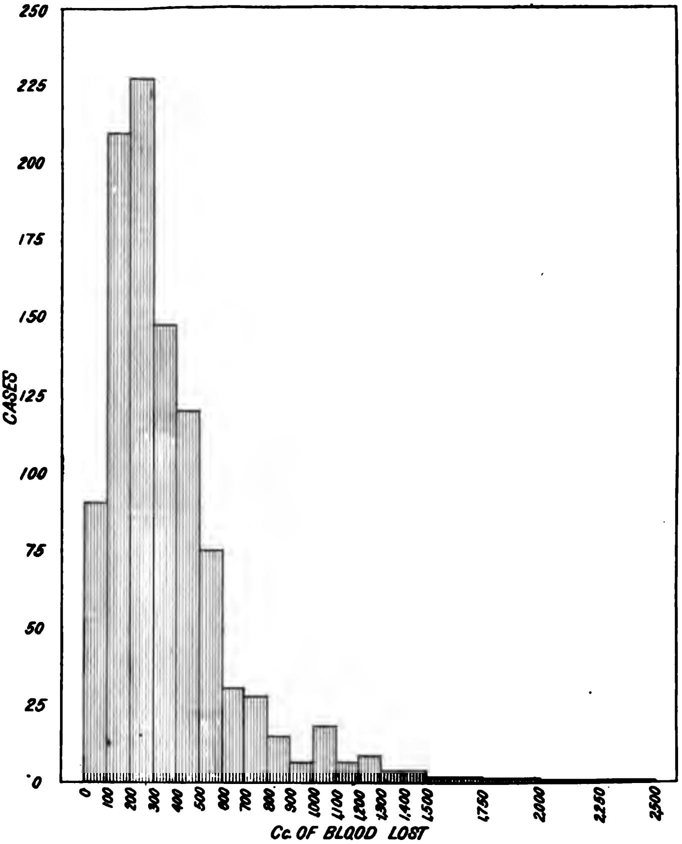

FIG. 2. CHART II.—Showing amount and frequency of bleeding following 1000 consecutive spontaneous labors.

While such statistics may be of practical value to the obstetrician, they are of little interest to medical men in general; but, on the other hand, our observations as to the incidence of actual hemorrhage, and more particularly concerning the tolerance which freshly delivered women appear to exhibit to it, are of general significance. Upon entirely arbitrary grounds I selected 600 c.c. as the limit between physiological bleeding and postpartum hemorrhage, and our figures show that 130 cases in the series (13 per cent.) belong in the latter category. Table II shows the frequency and amount of such hemorrhages:

TABLE II.—SHOWING FREQUENCY AND AMOUNT OF POSTPARTUM HEMORRHAGE IN 1000 SPONTANEOUS LABORS.

130 women lost 600 c.c. of blood or more
71 women lost 800 c.c. of blood or more
41 women lost 1000 c.c. of blood or more
18 women lost 1250 c.c. of blood or more
8 women lost 1500 c.c. of blood or more
4 women lost 2000 c.c. of blood or more
1 woman lost 2400 c.c. of blood or more

As experience has taught me that in normal freshly delivered women serious symptoms do not follow hemorrhages of less than 1000 c.c., our interest is centered upon the 49 women who lost one litre or more. Of these, 31 lost between 1000 and 1250 c.c. of blood and 18 more than that quantity. As only one patient in the first group presented symptoms of acute anemia, we are particularly interested in the 18 women of the second group, abstracts of whose histories are given at the end of the article. Of these, 10 lost less and 8 more than 1500 c.c. of blood, the later being distributed as follows:

2 patients lost 1500 c.c. (Cases XLII and XLIII)
1 patient lost 1600 c.c. (Case XLIV)
1 patient lost 1700 c.c. (Case XLV)
2 patients lost 2000 c.c. (Cases XLVI and XLVII)
1 patient lost 2100 c.c. (Case XLVIII)
1 patient lost 2400 c.c. (Case XLIX)

While 49 hemorrhage cases, in which the loss of blood was 1000 c.c. or more, constitutes too small a material to justify the formulation of far-reaching conclusions, nevertheless I believe that their study will bring out several points of interest and importance. The only other study of the kind with which I am familiar was made in 1904 by Ahlfeld, who reported that in a series of 6000 labors postpartum hemorrhages amounting to 1500 c.c. or more occurred in 159 women, an incidence of 2.65 per cent. as compared with 0.8 per cent. His cases were divided as follows:

132 patients lost 1500–2000 c.c.
23 patients lost 2000–2500 c.c.
4 patients lost 2500 c.c. or more.

with four deaths in the first group, one in the second and none in the third. Furthermore, he related the history of a patient not included in his series who recovered from a hemorrhage of 3250 c.c. without serious symptoms.

It is generally believed that patients suffering from serious hemorrhage present a succession of more or less characteristic clinical symptoms, the most important of which are: rapid and small pulse, shock, air hunger, and, if recovery ensues, a rapid decrease in the percentage of hemoglobin, together with a marked diminution in the number of red cells, which reaches its lowest point by the third day, and then gradually returns to normal. The histories given below, however, conclusively demonstrate that not a few freshly delivered women may lose excessive quantities of blood without presenting any evidence of shock, and that occasionally the extent of the hemorrhage would not have been appreciated had the blood lost not been collected and measured. Thus, only one of the 31 women who lost between 1000 and 1250 c.c. presented any immediate symptoms attributable to loss of blood, but she was considerably shocked and had a pulse rate of 118 one hour and a quarter after delivery (Case XXX). Furthermore, only four of the 18 patients losing from 1250 to 2400 c.c. caused us any anxiety; none were seriously ill and all recovered.

It is currently believed that the pulse is unusually slow during the normal puerperium, and that the readiest method of evaluating the effect of hemorrhage is by its increased rate and poor quality. Our observations, however, show that the first assumption is incorrect, and that in freshly delivered women, the second does not occur with the regularity one might expect.

In going over our 1000 cases, particular attention was directed to the condition of the pulse during the forty-eight hours following delivery, and as it was counted as a matter of routine at four hour intervals, we usually had a record of twelve counts for the period. The highest count in each case was recorded and used for statistical study, and the following table shows that most of the women at some time during this period had a more rapid pulse rate than is generally believed.

TABLE III.—SHOWING THE HIGHEST PULSE RATE DURING THE FIRST FORTY-EIGHT HOURS OF THE PUERPERIUM.

	Without hemorrhage, cases	With hemorrhage, cases	Totals
Pulse below 60	1		= 1
Pulse below 60– 69	15	1	= 16
Pulse below 70– 79	97	7	= 104
Pulse below 80– 89	273	31	= 304
Pulse below 90– 99	314	44	= 358
Pulse below 100–109	112	25	= 137
Pulse below 110–119	36	14	= 50
Pulse below 120–129	17	5	= 22
Pulse 130 and over	7	1	= 8
	872	128	1000

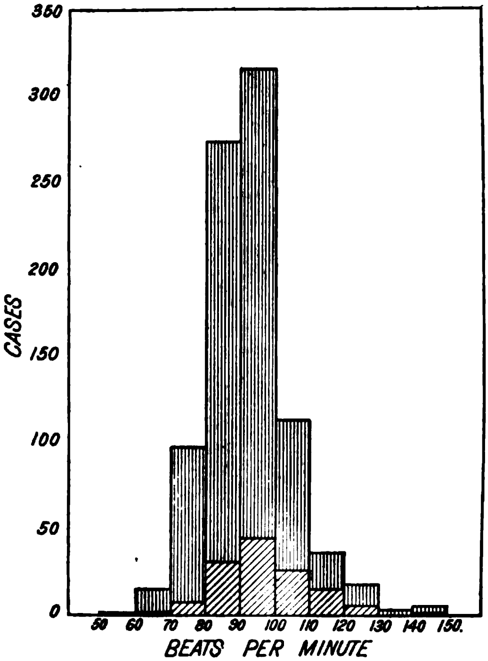

FIG. 3. CHART III.—Showing highest pulse rate during the first 48 hours following delivery in 1000 spontaneous labors. Vertical and oblique lining indicates cases with or without hemorrhage respectively.

In the two groups the average rate was 91.66 and 96.45 respectively, which apparently indicates that the average effect of hemorrhage is to raise the pulse rate by only five beats. Chart III (Fig. 3) represents these figures graphically, and clearly shows that the pulse rate most usually encountered is between 80 and 100, irrespective of whether labor is followed by physiological bleeding or by actual hemorrhage.

Furthermore, it is interesting to compare these findings with those observed in the operative deliveries, which were interpolated between the 1000 normal labors. Of the 162 operations, 138 were not associated with hemorrhage, and these showed an average pulse rate of 101.9 which in turn was 5 beats higher than that observed in the spontaneous labors followed by hemorrhage.

From a study of these figures it seems justifiable to conclude: (1) that the pulse rate following normal spontaneous labor is higher than is generally believed; (2) that postpartum hemorrhage leads to a slighter relative elevation than would be anticipated *a priori;* and (3) that the strain of a difficult labor, necessitating operative termination, results in a greater average elimination than postpartum hemorrhage.

Professor Raymond Pearl was kind enough to study these figures from a statistical point of view, and he formulated his data in Table IV, from which he has drawn the following conclusions:

TABLE IV.—PULSE RATE IN SPONTANEOUS AND OPERATIVE LABORS.

	Spontaneous labors		Operative labors, without hemorrhage
	Without hemorrhage	With hemorrhage	
Average	91.66 ± .27	96.45 ± .75	101.89 ± .91
Standard deviation	11.90 ± .19	12.61 ± .53	15.81 ± .64
Coefficient of variation	12.98 ± .21	13.07 ± .56	15.52 ± .64
Mode	88.48 ± 1.36	93.08 ± 1.30	91.72 ± 1.53
Median	91.09	95.18	98.59
Skewness	+.27 ± .11	+.27 ± .08	+.64 ± .12

1. In spontaneous labors the average pulse rate is increased only about 5 beats in the cases with hemorrhage as compared with those without. This increase, while absolutely small, is clearly significant statistically, having regard to the probable errors. In operative labors the rate is about 10 beats higher, without hemorrhage.

2. The model pulse rate is smaller than the average in every case; the skewness of the distribution being in the positive direction.

3. In the case of spontaneous labors the skewness is not certainly significant in comparison with its probable error.

Passing from these general statistical data to the condition of the pulse in the individual cases of severe hemorrhage, I find it impossible to make any categorical statement concerning it, and I can only say that in many cases its rate and character during or shortly after postpartum hemorrhage in no way correspond to the quantity of blood lost, and therefore they are not necessarily indicative of the gravity of the condition. Table V gives a graphic idea of such variations.

TABLE V.—SHOWING PULSE RATE IMMEDIATELY AFTER, AND HEMOGLOBIN PERCENTAGE 3 DAYS AFTER POSTPARTUM HEMORRHAGE.

Cases	Amount bleeding	Pulse	Hemoglobin 3d day	Notes
30	1000	118	?	Definite shock
42	1500	136	?	Pulse 84 four hours later
43	1500	90	55	No immediate symptoms
44	1600	rapid	42	Pulse 75 four hours later
45	1700	good	?	Pulse 65 four hours later
46	2000	good	38	Pulse 104, one and a half hours later (red cells 5th day 2,632,000)
47	2000	good	42	Pulse 78 three hours postpartum
48	2100	84	40	Pulse 104 one hour later
49	2400	100	38	Pulse 115 one and a half hours later (blood pressure 70 immediately after)

From these figures it is clearly evident that in certain cases the immediate clinical symptoms were not proportionate to the degree of hemorrhage, and in several instances, notably in Case XLVIII, the extent of hemorrhage would have escaped observation had the blood lost not been measured as a routine procedure. Likewise in Case XLIX, the pulse rate and the general condition of the patient gave no indication that 2400 c.c. of blood had been lost; although the fall of the blood pressure to 70 immediately after its cessation indicated profound shock, and the decrease in the hemoglobin content to 38 per cent. on the third day gave conclusive evidence of the existence of pronounced anemia.

Table V also gives information concerning the hemoglobin content of the blood on the third day, and makes it apparent that in five of the severe cases a pronounced reduction had occurred. In several instances a rapid return to normal was noted, but in others the low percentage persisted throughout the patient's stay in the hospital.

Unfortunately, routine hemoglobin examinations were not made in all of the patients losing 1000 c.c. or more of blood, but, as far as our figures go, it may be said that the hemoglobin content was not markedly lowered unless the hemorrhage exceeded 1250 c.c., but beyond that limit several marked reductions were noted. For example, readings of 40 per cent. were made upon two patients who lost 1350 and 1400 c.c. respectively, which are practical identical with those noted in patients losing from 2000 to 2400 c.c.

From what has already been said it is apparent that a certain proportion of freshly delivered women may lose from 1250 to 2400 c.c. of blood with comparative impunity, and present such slight immediate symptoms that the extent of hemorrhage might escape recognition if the blood were not collected and measured. If the usual computation be accepted that the total amount of blood in the body corresponds to one-thirteenth of the body weight, and assuming that the latter averages 130 pounds, such hemorrhages mean that the patients had lost from one-quarter to one-half of their total blood. In males and nonpregnant women such a loss would inevitably be followed by alarming symptoms of shock and acute anemia, yet they did not appear in any of the patients here mentioned, nor was their general condition so serious that the necessity for transfusion was at any time entertained.

The question accordingly arises as to how such an immunity is brought about, and why the characteristic symptoms of shock do not always develop. There can be no question concerning the actuality of the hemorrhage, as its amount was actually measured, and furthermore, the striking reduction in the hemoglobin content on the third day, as well as the marked pallor and definitely anemic appearance of the patients affords still further evidence of a serious loss of blood. Yet in many cases the pulse remained good in quality and was scarcely accelerated in rate.

The first explanation to occur to one is that so decided an increase in the total amount of blood had taken place during the latter months of pregnancy, that the amount lost by hemorrhage represented a smaller proportion of the total content in pregnant women than would have been the case in nonpregnant individuals, with the result that the fraction remaining in the body is sufficient to tide over the immediate needs. A certain plausibility is lent to such an explanation by the observations of Miller, Keith and Rountree, made in my service, that an increase in the total amount of blood actually occurs during pregnancy. I, however, do not believe that such an explanation is permissible for two reasons: First, that the normal increase is only slight; and secondly, that the low hemoglobin content noted after the serious hemorrhages affords indubitable evidence that a large proportion of the blood in the body had actually been lost.

Some other explanation for the relative immunity must, therefore, be invoked; but unfortunately we are not in a position to do so satisfactorily. I am inclined, however, to believe that it is in some way associated with other protective processes, which develop during the last weeks of pregnancy and at the time of labor. Slemons has clearly shown that the nitrogenous metabolism at the time of labor is reduced to a minimum, while my own unpublished observations upon the respiratory exchanges indicate that the parturient women can go through labor with little or no increase in energy consumption, as indicated by the oxygen intake and carbon dioxide output. In other words, as I loosely express it to the students, she is conducting her body upon a "low gear" metabolism, so that the amount of energy necessary for the demands of the body plus the increased work incident to labor is scarcely increased.

If this supposition is correct, it may be permissible to assume that the temporary immunity to excessive loss of blood may in some way be connected with such a mechanism, and that the relative absence of shock may be due to the fact that for a few hours after labor the patient can get along upon a greatly diminished amount of blood, so that by the time the normal metabolism has been reëstablished, the reparative processes will be sufficiently well under way to tide the woman over the immediate emergency. It must, however, be understood that such an explanation is entirely theoretical and is not supported by any known facts.

Finally, in order to avoid any possibility of misunderstanding, I wish to emphasize strongly that I do not claim that freshly delivered women are entirely immune to excessive hemorrhage, as to do so would be running contrary to ordinary clinical experience. But what I wish to point out is that many women may lose large quantities of blood with apparent impunity, and that routine measurement will show that an excessive loss occurs much more frequently than is generally believed. In my experience the average normal women can lose 1250–1500 c.c. of blood with little or no ill effect; and also that many can lose much larger quantities with relative impunity. At the same time a recent observation in private practice has taught me that a loss of 1800 c.c. may put the life of the patient in the greatest jeopardy, and Ahlfeld has reported several fatalities in which the loss barely exceeded 1500 c.c.

Abstracts of histories of patients losing 1250 c.c. or more blood (including one patient presenting symptoms following a loss of only 1000 c.c.).

In cases I to XXIX the loss varied from 1000 to less than 1250 c.c.

CASE XXX. 1000 C.c. (Symptoms).—History 8210, due to partial separation of placenta. Sixteen-year-old para-i. Pelvis normal, L. O. P. Prolonged second stage. Profuse bleeding immediately following birth of the child necessitating expression by Credé in ninety minutes. Patient evidently shocked; pulse 118 one and a quarter hours postpartum.

CASE XXXI. 1250 C.c.—History 8300, due to uterine atony. Twenty-three-year-old, para-i. Pelvis normal, L. O. A., labor easy. Bleeding after expulsion of placenta from vagina. No note as to symptoms. Pulse 104 two hours postpartum.

CASE XXXII. 1250 C.c.—History 9286, due to uterine atony. Twenty-three-year-old para-i. Pelvis normal, R. O. A. Preëclamptic toxemia treated for three weeks before labor. Labor prolonged, second stage four hours thirteen minutes, bleeding entirely after expression of placenta from vagina. No symptoms. Pulse 84 three hours postpartum.

CASE XXXIII. 1275 C.c.—History 8782, due to uterine atony. Seventeen-year-old para-i. Pelvis slightly generally contracted, L. O. A. labor easy. Bleeding after expulsion of placenta. Condition at all times good. Pulse 75 one and three quarters hours postpartum.

Case XXXIV. 1300 C.c.—History 8491, due to uterine atony. Twenty-year-old para-i. Pelvis normal, L. O. A., labor prolonged, second stage three hours. Bleeding after expression of placenta lasting for twenty minutes. Although the patient was pale for two days the pulse only rose to 96 immediately after the bleeding and soon returned to normal.

CASE XXXV. 1350 C.c.—History 8310, due to partial separation of placenta. Twenty-year-old para-i. Pelvis normal, R. O. A. abor easy, repeated attempts to express placenta by Credé were not successful until one hour and twenty minutes after delivery. During the entire period bleeding at intervals which ceased completely after expression. Condition good, pulse 95 one and a half hours postpartum.

CASE XXXVI. 1350 C.c.—History 9492, due to uterine atony. Twenty-four-year-old para-i. Pelvis normal, L. O. A., labor easy. Bleeding entirely after expression of placenta, uterus boggy. Patient in excellent condition at end. Pulse 88 two hours postpartum. Hemoglobin: 2d day 55 per cent.; 4th day 40 per cent.; 8th day 55 per cent.

CASE XXXVII. 1375 C.c.—History 9494, due to uterine atony. Twenty-two-year-old para-i. Pelvis normal, L. O. A., labor easy. Bleeding after completion of third stage. Patient in excellent condition. Pulse 104 two hours postpartum. Hemoglobin: 2d day 70 per cent.; 4th day 55 per cent.; 10th day 65 per cent.

CASE XXXVIII. 1400 C.c.—History 8446, due to uterine atony. Twenty-five-year-old para-i. Pelvis slightly generally contracted,

R. O. A., labor normal. Bleeding after expression of placenta from vagina. No symptoms. Pulse 80. Hemoglobin on 4th day 55 per cent.

CASE XXXIX. 1400 C.c.—History 8494, due to uterine atony. Twenty-four-year-old para-i. Pelvis normal, L. O. A., labor easy, bleeding throughout the third stage, but particularly after expulsion of placenta. Vigorous massage necessary for one hour afterward. Pulse 90. Hemoglobin 55, 40 and 60 per cent., immediately postpartum, third and tenth days, respectively.

CASE XL. 1450 C.c.—History 9105, due to partial separation and atony. Seventeen-year-old para-i. Pelvis generally contracted rhachitic, L. O. T., labor prolonged, thirty-one hours forty-five minutes. Bleeding began immediately after the birth of the child; expression by Credé eighteen minutes later. Patient's condition always good. Pulse 98 two and a half hours postpartum. One to one and one-half hours before birth of the child blood pressure was 124/94, while one hour after the birth of the child it had fallen to 98/74. Hemoglobin: One to one and one-half-hours antepartum 94.6; one hour postpartum 89 per cent.; 3d day 67.3 per cent.; 10th day 90 per cent.

CASE XLI. 1475 C.c.—History 9073, due to uterine atony. Eighteen-year para-ii. Pelvis normal, L. O. A., labor easy. Bleeding following expression of placenta from vagina. The condition was never alarming and the amount of bleeding would not have been noted had the blood not been measured. Blood pressure on admission 138/80; after conclusion of hemorrhage 98/54. Except for this no symptoms. Hemoglobin: end of second stage 82.6 per cent.; one hour postpartum 81.4 per cent.; 3d day 54.5 per cent.; 10th day 66.8 per cent.

CASE XLII. 1500 C.c. (Symptoms).—History 8804, due to partial separation of placenta and uterine atony. Eighteen-year-old para-i. Pelvis normal, L. O. A., labor easy. Bleeding commenced immediately after the birth of the child necessitating Credé's method. It continued afterward and gradually ceased after the hypodermic administration of pituitrin. Although the pulse rose immediately thereafter to 136, patient's condition was never alarming; pulse fell to 85 four hours later and did not exceed 104 afterward.

CASE XLIII. 1500 C.c..—History 8904, due to partial separation of placenta. Twenty-four-year-old para-i. Pelvis normal, R.O.A., labor easy. Oozing throughout entire third stage ceasing immediately afterward. No symptoms. Pulse 90. Hemoglobin immediately postpartum 65 per cent.; 3d day 55 per cent. and 12th day 60 per cent.

CASE XLIV. 1600 C.c. (Symptoms).—History 8835, due to uterine atony. Nineteen-year-old para-ii. Pelvis normal, L. O. A., labor easy. Bleeding after extrusion of placenta. Immediately thereafter pulse was rapid but never thready. Four hours later it fell to 75. Hemoglobin only determined on 9th day when it was 42 per cent.

CASE XLV. 1700 C.c.—History 9356, due to uterine atony. Thirty-nine-year-old para-v. Pelvis normal, R. O. P., prolonged labor. Hydramnios, 3 liters. Bleeding after completion of third stage. Retention of succenturiate lobe was suspected but was not found on introducing hand *in utero*. Bleeding stopped after a hot intrauterine douche. Pulse "good quality," 60 twelve hours postpartum.

CASE XLVI. 2000 C.c. (Symptoms).—History 8268, due to uterine atony. Twenty-three-year-old para-i. Generally contracted funnel pelvis. L. O. A., labor easy. Bleeding began immediately after the birth of the child and as it continued after the expulsion of the placenta the cervix was examined and found not to be torn, whereupon the hand was introduced into the uterus and found a few shreds of membranes but no placental tissue. Hemorrhage controlled by intrauterine pack. The patient was not sufficiently shocked to cause a special note to be made in the history. Two and one-half hours later pulse 104. Hemoglobin: 2d day 38 per cent.; fifth day 39 per cent.; 16th day 38 per cent.; the number of red cells varying from 3,120,000 to 2,632,000 to 2,832,000 on the respective days.

CASE XLVII. 2000 C.c.—History 8393 due to retained fragments of placenta. Twenty-eight-year-old para-v. Pelvis normal, R. O. P., labor rapid. Bleeding following expulsion of placenta was only checked after manual removal of the retained fragments followed by hot intrauterine douche. Condition at no time alarming. Pulse 78 three hours postpartum. Hemoglobin immediately after bleeding 60 per cent.; 1st day 42 per cent.; 11th day postpartum 42 per cent.

CASE XLVIII. 2100 C.c.—History 9265, due to partial separation of placenta. Twenty-nine-year-old para-iii. Pelvis normal, L. O. P. Slightly prolonged labor. Bleeding began ten minutes after the birth of the child and continued until the placenta was expressed from the vagina thirty minutes later. During this entire period the uterus remained firm and the loss of blood would not have been noticed had it not been collected and measured. No treatment required. Pulse of good quality 84, one hour later 104. Hemoglobin: 24 hours postpartum 40 per cent.; 4th day 42 per cent.

CASE XLIX. 2400 C.c. (Symptoms).—History 8941, due to retention of placental cotyledon. Thirty-two-year-old para-i. Pelvis normal, L. O. A., labor easy and rapid. Bleeding during and after the third stage necessitating introduction of the hand *in utero* and the removal of a retained cotyledon. Immediately thereafter the pulse was 100 and the blood pressure 70. One and a half hours later the pulse had risen to 115 where it remained for the next twenty-four hours. Hemoglobin immediately postpartum 50 per cent.; 2d day 38 per cent. and 10th day 60 per cent.

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AN ANALYSIS OF THE SIGNS AND SYMPTOMS OF EARLY ECTOPIC PREGNANCY.*

BY

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THE profession in general has been so well trained in the symptomatology and diagnosis of appendicitis that appendectomy has become our commonest operation. The medical student has received such good instruction and so many papers on appendicitis have been presented before medical societies, that not only the general practitioner but also the layman has become alert on the subject, so that neglected cases of appendicitis are now very rare, and for a patient with appendicitis to die unoperated, is almost unknown.

The profession does not show the same alertness in ectopic pregnancy. The family doctor is so unfamiliar with the symptoms that neglected cases are the rule in extrauterine pregnancy, rather than the exception. This is a condition deserving a remedy. The gynecologist and obstetrician should make the profession at large more familiar with the subject of ectopic gestation and students should be given a different conception of the symptomatology and diagnosis than they usually obtain from their text-books. The chapter on ectopic pregnancy in many text-books should be rewritten. More attention should be given the early unruptured

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cases. In most of the books now used, so much emphasis is given advanced and ruptured cases that the student does not suspect ectopic pregnancy unless the unusual or exaggerated case is at hand. Unless a woman is in imminent danger of her life the possibility of ectopic pregnancy is very likely not to be considered.

Pain in ectopic pregnancy is too graphically portrayed as stabbing, tearing or lancinating. When a tube ruptures the pain may be, and usually is, extreme. While it sometimes happens that this is the first evidence that all is not as it should be, yet it is exceptional indeed for the patient to have no preliminary discomfort. Almost without exception, she has had backache or cramps for days or even weeks preceding the rupture. It is very common for her to have attacks of pain which she attributes to gas in the intestines and calls them "gas pains." These cramps are intermittent and appear and reappear usually for days before the case terminates in rupture. *To emphasize the severity of the pain as the significant feature, speaking for ectopic pregnancy, is like dwelling upon the emaciation in cancer of the uterus, to await it in an otherwise clear case, is to court disaster.* I have operated at least one patient for ectopic pregnancy who had not the slightest pain or discomfort. She came complaining only of intermittent bleeding of a month's duration. A patient who has gone by her regular period and then begins to complain of cramps in the side of the pelvis or of "gas pains" should be looked upon as possibly suffering from an ectopic pregnancy.

Amenorrhea is too prominently mentioned in the symptomatology. Usually of course a woman will not suspect that she is pregnant unless a menstrual period has been missed. By far the largest number of women coming to operation for ectopic pregnancy, however, are not suspicious at the time that they are pregnant. It usually requires questioning to elicit the fact that irregularity has existed. The history ordinarily states that the patient has just menstruated or is now menstruating. The experienced gynecologist, however, is accustomed to the fact that women are not very accurate regarding this detail in their history, and by cross examination finds that her history is not dependable in this respect or that she went a few days over her expected period and then had what she considered a belated period. Further quizzing usually brings out also that this so-called belated period was not as usual in amount and duration. Usually he will learn that the bleeding came, was scanty, lasted only a few hours, or a day or so, and then disappeared to reappear at irregular intervals and in varying amounts. Continuous profuse bleeding for a long period is exceptional, but irregular intermittent bleeding over a considerable period of time is very suspicious. There may be only a bloody liquid discharge with or without clots. The irregular bleeding is so prominent that the patient forgets that she skipped or went over her regular time. If the patient at first thought that she was pregnant she may now think that she is about to miscarry. *Every patient presenting herself with the suspicious symptoms of a threatened, imminent or incomplete abortion should be examined with the possibility in mind that she may be a case of ectopic pregnancy, more especially if the cramps are located in the side of the pelvis instead of being over the uterus.*

If it were taught that this irregular bleeding is more typical of ectopic pregnancy than is amenorrhea, then more ectopic pregnancies would be detected early. It is very rare indeed for amenorrhea to be constant in ectopic pregnancy. On the contrary, the more dependable the history of unbroken amenorrhea the more probable is the case a uterine instead of an ectopic pregnancy.

Another point which is overemphasized is the passage of a cast of the uterus or of smaller portions of the decidua. An interne will frequently consider it useless to think of ectopic pregnancy unless this fact is established. To obtain the definite information from an ectopic pregnancy patient that she has passed a membrane, is the exception instead of the rule. While shreds of decidua may have been expelled they usually escape with blood clots so that the patient is not cognizant of their passage. If curetment scrapings or expelled membranes are examined microscopically, the student is lead to suppose that an exact diagnosis can be made, for he is told if a uterine pregnancy is present then chorionic villi will be found, if an extrauterine pregnancy is at hand decidual cells without villi will be seen." If chorionic villi are found it certainly proves that uterine pregnancy exists; this absence, however, does not prove that a uterine pregnancy is not at hand, unless the complete decidual lining has been examined and a careful search reveals no villi. If only pieces of expelled tissue are examined, however, no certainty exists. The ovum, after imbedding in the decidua, requires several weeks to grow sufficiently to bring the chorion in opposition to the decidua in all parts of the uterus. Before this occurs a piece of decidua may be expelled from a uterine pregnancy and if it lay far enough away from the site of implantation microscopical examination will not show chorionic villi. Therefore the absence of villi in examined membranes does not rule out uterine pregnancy.

The failure to obtain decidua by curettage in a suspicious case does not rule out pregnancy, since the uterus may have expelled its contents and though ectopic pregnancy exists the curet may fail to obtain material for examination. This is especially true if the pregnancy is dead. Then also well-defined decidual cells may be found in the membrane of membraneous dysmenorrhea. It seems to me therefore important, that text-books put less emphasis upon the passage of and examination of expelled membranes in ectopic pregnancy. Very few ectopic pregnancies pass any membranes, as such, and in general the more certain a patient is of having expelled organized tissue, the more probable it is that it is a case of uterine rather than of ectopic pregnancy.

Great care is taken to teach that the uterus enlarges in ectopic pregnancy. It is true that if an ectopic pregnancy lasts long enough the empty uterus gradually and slowly enlarges, for the same reason that the breasts enlarge in pregnancy, until, if the pregnancy continues until near term, the uterus reaches a size approximating that of a gravid uterus in the fourth month. The closer the ectopic sac is to the uterus the more rapid the growth of the uterus. While this is true enough, what percentage of ectopic pregnancies ever continue long enough to produce sufficient enlargement of the uterus to be detectable by vaginal examination? In by far the largest number the ectopic sac ruptures before much enlargement of the uterus can occur. Taking cases as they come, operation reveals *some* enlargement of the uterus in a considerable percentage of cases, a large number, however, show no appreciable increase in size and indeed frequently the uterus is smaller than normal, since where an undeveloped uterus and tubes exist there is especial liability, if pregnancy occurs at all, for the pregnancy to be ectopic.

The more certain you are in a suspected case of pregnancy that the uterus is enlarged the less probability is there that the pregnancy is extrauterine. On the other hand, if the uterus is not enlarged, and more particularly if it is smaller than normal, an ectopic pregnancy is very liable to be present, especially if the patient is complaining of colicky pains and is having intermittent bleeding.

The failure to elicit a history of nausea or breast symptoms in an otherwise outspoken case of ectopic pregnancy, is frequently a cause of mistake in diagnosis. Nausea is absent in a larger percentage of uterine pregnancies than is ordinarily recognized, and breast manipulations frequently fail until pregnancy is far advanced, so that an ectopic pregnancy ruptures before the subjective symptoms of pregnancy have ordinarily had time to occur. If nausea or breast symptoms are complained of their presence is helpful. In diagnosis, their absence, however, is of no significance whatever.

We are taught that extrauterine pregnancy produces an enlargement of the appendages which may be felt at the side of the uterus. It may be found if the pregnancy has existed long enough to produce a palpable swelling, but frequently rupture occurs before that time. Moreover, if large enough previous rupture may so diminish the size of the swelling or increase the rigidity of the patient that palpation of the appendages is negative. The finding of an enlargement of the appendages in a patient supposedly pregnant, is highly suggestive indeed. It frequently happens, however, that a corpus luteum becomes cystic and may produce a temporary swelling of considerable size in uterine pregnancy. If the uterus is somewhat enlarged and there is no irregular bleeding or cramps, great care must be taken not to mistake such a case for an ectopic pregnancy. The smoother the course of the pregnancy, the less importance must be placed upon a swelling of the appendages; the more disturbed the pregnancy, the greater the worth of the pelvic findings. The failure to palpate a supposed gestation sac in a case of shock and pain should deter no one from operating an otherwise clear case of ectopic pregnancy.

The symptoms of a ruptured tube are also too encyclopedically portrayed. The evidences of rupture are given as extreme pain of a tearing or stabbing character followed by shock, pallor, cold sweat, weakness, nervousness, increased pulse rate, increased respiration, falling of hemoglobin and red cell count, air hunger, dulness of the flanks and distended abdomen. These symptoms of internal hemorrhage are so thoroughly impressed upon the student and are so associated in his mind with rupture of a tube, that unless the patient presents most of these symptoms he rests assured that a rupture could not have occurred. Too frequently air hunger or dulness of the flanks is awaited to complete the evidence that the patient is actually in danger.

Not enough emphasis is placed upon the fact that the severity of the symptoms depends upon the amount of blood lost, not merely upon the fact that the tube has ruptured. If only small vessels have been torn, or if the tear is incomplete, the patient will have sudden pain, not necessarily prostrating, followed perhaps by some nausea and weakness. If the bleeding stops the patient may promptly recover and feel about as usual. If a larger amount of blood is lost, she may get pale and break out in a sweat and vomit and feel too weak to arise from bed. Only in extreme losses of blood would she experience air hunger and distention of the abdomen. The first severe pain may, of course, mean that a large vessel is torn and the patient may rapidly run the gamut of the above-outlined symptoms and die in a short while. A perusal of case histories will show, however, that it usually happens that the larger and life-endangering hemorrhage has been preceded by one or a number of smaller but nevertheless typical attacks of partial rupture of the tube. It cannot be too profoundly impressed upon physicians that though a patient makes a rapid recovery from such an attack, the necessity for immediate operative attention is not passed, because it may be a matter of only a few hours until a larger and fatal hemorrhage occurs. Because a patient fails to break out in a cold sweat and have air-hunger, this does not mean that she has not had an internal hemorrhage, nor does a prompt recovery after pain and syncope mean that ectopic pregnancy is not present. *On the contrary, any woman who is of obstetrical age and who is seized with an abdominal pain of severity, followed by shock or syncope, even if transient, must be regarded as a possible case of ectopic pregnancy until proved otherwise.*

When pelvic findings are negative and the symptoms of a partial rupture of the tube are transitory, the physician frequently relies upon a blood count to make his diagnosis, and by that very step sometimes falls in error. The bleeding having been only of medium grade the lowering of the hemoglobin and red cell count, may not be sufficient to warrant a diagnosis of internal hemorrhage. He then probably inclines to a diagnosis of appendicitis and finds support in the fact that a leukocytosis is present. In unruptured ectopic pregnancy there is occasionally a slight increase in the number of leukocytes; *usually*, however, the leukocyte count is undisturbed. When a rupture of the tube occurs and hemorrhage results, there is at first a decrease in leukocytes, proportionate to the decrease in the red cells. There soon occurs, however, a rapid increase in leukocytes so that a few hours later a leukocytosis of from 15 to 30 thousand even may be encountered. The larger the amount of blood lost the surer is this leukocytosis to occur and it may be very outspoken in cases where a reading of the hemoglobin and red cell count does not support the suspicion of an internal hemorrhage. The finding of such a leukocytosis may lead the physician to diagnose an appendicitis since he does not know that this is typical in internal hemorrhage. *A leukocytosis with a normal or subnormal temperature should lead to the diagnosis of probable ruptured ectopic pregnancy in a case where there has been severe abdominal pain followed by nausea and perhaps vomiting.*

In closing, I would advocate a wider teaching regarding the advisability of *exploratory vaginal incision in doubtful cases.* In cases of acute abdominal crisis where no doubt exists that something serious is the matter and something must be done in the patient's interest, no debate will occur regarding the wisdom of abdominal incision with the intention of carrying to completion any necessary operation.

There are, however, too many patients who are not acutely ill or in immediate danger but who present more or less suggestive symptoms of ectopic pregnancy, that are sent to a hospital to be under observation. Their symptoms are not severe enough to warrant an abdominal operation, yet are so suspicious of ectopic pregnancy that the attending physician does not feel like allowing them to go home. If a case is suspicious enough to be in a hospital it is suspicious enough to warrant a definite decision as to whether an ectopic pregnancy is present or not. In this class of cases a decision can be easily reached by vaginal incision. If no ectopic exists the danger to the patient is slight and is compensated for by the security obtained. If an ectopic exists it can be operated either vaginally or abdominally according to the circumstances, while the patient is still in good condition.

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THE NOURISHMENT OF THE PREGNANT WOMAN.*

BY

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In prenatal work there is no subject of greater practical importance than the nourishment of the pregnant woman.

There are reasons for believing that with the ordinary individual the appetite of the healthy human being is a reasonable guide to the selection of his food. The question naturally arises does pregnancy so alter the conditions of the body that the appetite of the individual is no longer a safe guide.

We know that the mother must nourish not only herself, but the unborn child. In addition to this she stores up nitrogen to provide for the unusual expenditure of energy in parturition. Under unusual conditions of cold she requires also additional supplies of heat-producing food. These circumstances would suggest a liberal diet, comparatively rich in proteids, for the pregnant woman.

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Undoubtedly the absolutely healthy individual has the appetite quickened by pregnancy. Vomiting must be considered as pathological and unnatural. So abnormal cravings for acids, highly spiced and strongly flavored foods must also be regarded as abnormal.

We are accustomed to regard the digestion and assimilation of proteid material as one of the difficult problems in the care of the pregnant woman. Our first impulse in the toxemia of pregnancy is to remove from the diet proteids to a large extent. How then can we reconcile the need of the pregnant woman for proteid material with her capacity apparently lessened to assimilate it?

The older view upon this subject was satisfied with a practically milk diet, and unquestionably milk, fruit and bread furnish the elements essential in the diet of pregnancy, and yet in many instances this does not furnish sufficient for the needs of the pregnant woman. Again, many pregnant patients believe that the free use of fruit prevents the accumulation of calcareous material in excess in the skeleton of the fetus and in order to avoid the suffering and danger caused by a large and unusually ossified fetal head such patients have often used fruit in excess and suffered from a lack of the essential elements of nutrition. A patient recently came under the observation of the writer who had carried this to such an extent that when taken ill with influenza she had no power of resistance and examination of the blood showed great deficiency in its essential elements.

To what extent should meat be used as proteid food by the pregnant woman? There is unquestionably in the minds of the profession a strong prejudice against the free use of meat during pregnancy. Unquestionably excess in this matter produces a large and overgrown and unduly hard fetal skeleton. The largest child coming under the observation of the writer was delivered by embryotomy from a vigorous primipara whose appetite had been unrestrained during pregnancy and who had eaten freely of meat four times daily. But must meat be omitted from the diet during pregnancy and upon what grounds and what may be substituted in its place?

A reasonable answer to these questions depends above all upon the individual peculiarities of the patient. Some women are highly carnivorous and such during pregnancy would suffer were they entirely deprived of meat. On the other hand, there can be no question of the wisdom of lessening the quantity of beef, mutton, pork in all forms and veal taken by the pregnant patient. A fair average may be found if the so-called red meats are used but once or twice weekly and the proteid is obtained in other forms.

We are familiar with the fact that the white of egg contains proteid in one of its simplest forms. Eggs are usually well digested by pregnant patients and very often they are considered as among the very light and unimportant articles of food. A young primipara, the daughter of a physician, was brought to the city on the verge of eclampsia. She was highly edematous, with high pulse tension, abundant albumin and casts in the urine, severe headache and impairment of vision. Her father could not understand her condition as he said that he had removed meat from her dietary, but when asked what he had given her he replied "from six to eight eggs daily." This patient died in eclampsia. In permitting a pregnant patient to use eggs one must remember that they are among the most highly nitrogenous and nutritious forms of food.

Proteid contained in fish of all sorts seems often to be better assimilated than the proteid of animal flesh. So also the flesh of fowl, especially white meat when cold, is usually well digested. With many pregnant patients fish and white meat of fowl are well borne.

The fact that proteid matter of great value is contained in vegetables is often overlooked. We remember that peas and beans contain large quantities of proteid and that the majority of vegetables and such grains as barley and oats contain proteid in large quantities. Thus oatmeal is a highly proteid food.

In the important matter of the proteid element of food for pregnant women we believe it to be abundantly demonstrated by experience that all pregnant women of average digestion require very little of the heavier red meats. In prescribing diet for them it is of the utmost importance that the kind of proteid food be specified and as nearly as possible the quantity to be taken each day. Fortunately the range of proteid material is sufficiently large to permit the physician to consult the patient's appetite and natural inclination in most cases. We may determine to what extent proteid material is assimilated in two ways: First, by clinical observation of the patient, and, second, by the critical examination of the urine.

Unquestionably deficient nitrogenous metabolism shows itself in altered pulse tension. In the more common nephritic form of the toxemia of later pregnancy pulse tension is considerably and often exceedingly raised. On the contrary in the hepatic variety of toxemia pulse tension may be lower than normal. If nitrogenous metabolism is faulty frontal headache will soon develop and impair digestion. Irritation of the skin is another symptom of importance; the edema which accompanies high blood pressure is significant and as matters grow worse the irritation of the retina which precedes albuminuric retinitis adds to the clinical picture. The quantity of urine secreted lessens as the condition becomes serious. But we obtain our best knowledge of the failure of nitrogenous metabolism by the nitrogen partition of the urine. Here the urea is lessened, creatin and creatinin are increased, ammonia appears in varying quantity, indican is excessive. If the kidneys are most irritated, serum, albumin and casts accompany the disturbed nitrogenous metabolism. If the functions of the liver are most implicated they may be absent.

Can we reach a conclusion concerning the use of proteid food by pregnant women which while recognizing theoretical considerations, is based upon clinical experience and has been proven to be reasonable?

The individual patient must be thoroughly studied, her habits before pregnancy ascertained, her powers of digestion investigated. Patients accustomed to take proteid material abundantly and able to digest it well should have it with the restriction already described in the use of the heavier red meat. When, however, one finds from the history evidence that the patient has habitually digested proteid badly, it should be largely eliminated from the diet and what is taken should be in the simplest and most easily digested form. The crucial test as to the success in assimilating proteids lies in the condition of the patient as ascertained by her blood pressure, the examination of the urine and the general physical examination.

It is often interesting to observe that a patient who has been digesting proteid material badly will do much better as pregnancy approaches its termination. One can often predict the approach of labor by improvement in nitrogenous metabolism.

Next in importance to nitrogenous elements in the food of the pregnant patient are the hydrocarbons. During cold weather some pregnant patients take fat with positive benefit and seem to dispose of it completely. Here again as in proteid material vegetable fat is better than animal and olive oil used in salad dressing is usually well digested. Meat fat should be taken sparingly and may often be omitted entirely with advantage. Many pregnant patients crave sweets in large quantity. This is the same appetite which leads some persons to take alcohol. The practical test of the digestion of fat in pregnancy lies in the conditions under which the patient is living and her ability to assimilate the hydrocarbons taken. A pregnant woman in a cold climate and taking outdoor exercise freely will dispose of a considerable quantity of sugar or its derivatives, while another pregnant patient during the heated term of the year or in the tropics can take little or no sugar. We recognize the danger of the development of acetonuria during pregnancy and its symptoms are those commonly seen in the nonpregnant patient. Acetone and diacetic acid in the urine give ample warning.

It is customary to advise the pregnant patient to use cereal foods and bread and butter in abundance, but oftentimes the fact is forgotten that these substances may be eaten in addition to a considerable quantity of proteids or fat and that the combination may prove disastrous. Probably oatmeal is the substance in whose use the mistake is made most frequently. If cereals are taken much depends upon the way in which oatmeal is cooked and eaten. When well prepared it is digestible and readily assimilated, but if improperly cooked and eaten with large quantities of heavy cream and sugar forms an exceedingly indigestible article of diet. Other cereal foods, as barley, rice and wheat, are often better borne. Preparations of corn are especially valuable as producing an abundant secretion of milk.

Especially valuable in pregnancy are the earthy salts and fruit acids contained in vegetables and fruits. Vegetables furnish abundantly substances needed in the development of the skeleton while fruits and fruit pulp and fruit acids are the best possible laxatives for a pregnant patient and if used with a free supply of water they rarely fail to maintain the action of the bowels. Where indigestion is annoying and persistent, especially valuable is the juice of the fresh lime and also that of the fresh pineapple. Acidity and gastric indigestion may be annoying the patient and lead her to believe that she cannot take acids in any form.

In estimating the diet of pregnant patients one must not forget the very important part played by water. At least 1 quart of good water is requisite in twenty-four hours, and if the patient's metabolism is deficient a mildly saline water will prove of great benefit, but the mistake must not be made in cases where metabolism is deficient, of having the patient drink water in such excess that the kidneys are overcome and cease their function, and in the writer's experience in such a case a fatal termination followed.

While the alkaloidal stimuli of tea and coffee are not means of nutrition their use profoundly influences metabolism. Are they a detriment or a help during pregnancy? Here again the previous habits of the patient must decide and the practical test of improved or impaired digestion when tea or coffee is used will give a decisive answer. Many women have a belief that tea increases the secretion of breast milk and that coffee lessens it. On what accurate foundation this belief rests the writer is not aware. The chief value of tea lies in the water which goes with it and in the fact that it is a great mental comfort to the patient. A pregnant woman can better dispense with coffee than with tea and she is equally well off without them both, for the excessive use of tea tends to constipation and produces an obstinate form of intestinal catarrh.

Alcohol as a food substance is not needed by the healthy pregnant patient. Women who have been accustomed to the moderate use of light wines and beer may continue such use during pregnancy with very little, if any, injury, but the heavier liquors should be avoided.

Preparations of malt containing little or no alcohol may be taken in excess by a pregnant patient in the hope that malt will stimulate the secretion of milk. Disastrous results may follow for malt is not always easily digested. As a rule the use of malt extracts during pregnancy is rarely to be commended.

Pregnant patients do not often crave tobacco and yet cigarette smokers may become pregnant. In some instances the appetite for tobacco is greatly increased and digestion and assimilation may suffer as a consequence. Unquestionably pregnant women are better without tobacco, assimilation and digestion are more perfectly performed when the condition of the nervous system more nearly resembles the normal. Women who smoke sometimes give up the habit during pregnancy from fear that the child may be injured The same is true of other alkaloidal stimuli and narcotics.

Fresh air as a means of nourishment is of especial importance to the pregnant patient. This plainland homely fact is frequently ignored in our efforts to secure for our patients a healthy condition of nutrition. The craving for fresh air shown by many pregnant patients should be gratified to the fullest extent possible. The writer recalls a striking instance in which a woman considerably above the average age for child-bearing showed during her pregnancy a most intense craving for fresh air. Wrapped in furs she insisted in sitting upon the open terrace during the coldest months of a cold winter. Her general metabolism was good, but the nitrogenous metabolism was on the border line between the healthy and the diseased. She gave birth to twin children, when her intense craving for cold fresh air suddenly ceased.

We are apt to think of nourishment as a matter of food, but the question of baths and bathing, exercise, dress, rest and·sleep, whatever stimulates the circulation and promotes insensible perspiration is a valuable aid in nourishing the patient. The stimulating effect of a cool sponge following a warm tub bath is a familiar example. Of great importance in securing proper nutrition is exercise. The use of the motor car has reduced walking to a curiosity and yet nothing so good for the pregnant patient has ever been found. Suitable clothing which protects from drafts and chill is a necessity and the absurdities of fashion must give way before the essential needs of the prospective mother.

The pregnant animal other than the human appreciates the value of rest in promoting nutrition. The desire of the pregnant woman during the early months to avoid exertion and often to remain quiet is significant. At this time the immunizing principles in her blood are disposing of the budding villi of the chorion and the excess in the syncytium. In later pregnancy the rule should pertain not only to secure as good a night's sleep as possible, but certainly once and perhaps twice during the day the patient should have a reasonable period of absolute rest. Some patients assimilate food best if this rest is obtained before food is taken, while with others it seems to come more naturally after the meal.

It is a familiar observation among stock breeders that pregnant animals, if they are to continue in good condition and produce healthy young, must not be disturbed immediately before, during or after a meal and yet the pregnant woman often takes her food, when interrupted by the care of her children. We see the extreme results of mental condition upon the metabolism of pregnancy in some cases of illegitimate pregnancy. These patients are oppressed by the unfortunate condition in which they find themselves, are often in hiding from their family and are not infrequently badly nourished. The writer has seen toxemia and fatal eclampsia not infrequently under these conditions.

Another equally unfortunate state of affairs is that of the newly married woman who undertakes to do her own work, prepare food for her husband and herself and who is left alone by him during the day while he is at work. It is with the utmost difficulty that these patients can be properly nourished, and some of the most unfortunate cases of failure of nutrition coming under the observation of the writer have occurred among such women. It is the duty of the physician to warn the husband that his wife and the coming child cannot be properly nourished under these circumstances.

The most important question in prenatal care is the effect upon the fetus of the condition of the mother's nutrition. Does the well-fed mother produce the healthy child and does the ill-fed mother bring into the world the unhealthy and the unfit? Here one must remember that by the law of evolution the younger will live at the expense of the older if possible. The embryo or fetus will nourish itself to the very last moment at the expense of the mother. This often leads to unconscious deception upon the part of the patient. The mother will suffer out of all proportion in disturbed nutrition to the condition of the child and hence from the standpoint of the child's interest the health and strength of the mother should be conserved in every possible way.

Economic conditions are a most important factor in determining the nutrition of the pregnant woman. If the pregnant woman is to be well nourished sanitary conditions must be such that she can obtain pure food, pure air and live with the appliances for the proper preparation of food. A living wage is also an essential. Early marriage is to be distinctly encouraged from every standpoint, but such will be impossible unless the State recognizes its duty. The whole question of economics is so tremendously important at the present day and the necessity for a sound and vigorous population to replenish the waste of war that the question of the economic condition of the pregnant woman as governing her nutrition cannot be neglected.

The vexed question of servants and help for the pregnant woman in the procuring of her food and its preparation must be met by municipal sanitation. This should embrace the market house or the market on the curb where food of good quality can be procured at moderate price. If the patient is unable through weakness or through ignorance to prepare her food properly, a community kitchen to which she may send food for preparation or from which she may obtain food supplied and cooked, should meet the indication of practical help. Dwellings so arranged as to be on one floor and containing electrical appliances for cooking and heating food will greatly lessen the task of securing proper nutrition. In complicated cases the Social Service of hospitals and Visiting Nurse Society should be able to deal adequately with the problem of securing for a weak and sickly pregnant patient means for her proper nourishment.

250 South Twenty-first Street.

COEXISTENT DISEASE OF THE APPENDIX AND PELVIC ORGANS IN THE FEMALE.*

(A STUDY OF 746 OPERATIVE CASES.)

BY

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THAT the appendix is often involved in pathological conditions of the female pelvic viscera may be accepted as an established fact. Just how often is difficult of proof. In 1890 both Pozzi and Terillon, writing on this subject, dwelt particularly upon the importance of a careful study of the relationship between appendicitis and the various diseases of the pelvic organs in women. For a long time women were supposed to enjoy a relative immunity from appendicitis, and this was attributed largely to a more generous blood supply than existed in the male. This is now, however, no longer considered the case, though there still remains a slight difference in favor of the female to be explained later.

In recent years it has been well established that appendiceal attacks in women are often excited by disease, especially when inflammatory, of the pelvic organs, and that likewise, though to a lesser extent, disease of the tube and ovary may be caused by appendicitis. Many times has the failure to recognize coexistent adnexal disease made the removal of the appendix more or less of a failure, while the removal alone of a normal appendix, the pelvic lesion being entirely overlooked, has led to many a secondary operation that could have been avoided had the surgeon been more familiar with his gynecological pathology. In a study of the relationship between disease of the appendix and of the pelvic organs we find that this may be either accidental or causal, and probably the best classification from this point of view is the following given by Howard Kelly:

1. Where the disease of the appendix is primary, and the pelvic affection secondary.
2. Where the gynecological affection, whether tubal, uterine or ovarian, is primary, and the disease of the appendix secondary.

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*Read at a meeting of the New York Obstetrical Society, May 13, 1919.

3. Where the disease of the pelvic organs and the disease of the appendix are independent of each other.

Where the primary infection is in the appendix it is unusual to observe any very extensive pathological changes in the pelvic organs. A few restricting adhesions that, aside from the subjective symptoms they may cause by restricting the mobility of these organs, are of little moment, seldom if ever causing permanent tissue change to be observed. An exception to this may, however, be taken where the appendix is in the pelvis and suppurative, for in such cases it is not unusual for the pus to gain access to the tube through the fimbriated opening, or to the ovary at the site of a recently ruptured Graafian follicle, and cause extensive adnexal destruction.

When the primary infection is in the adnexa the secondary involvement of the appendix becomes a much more serious matter, for here extensive pathological changes often take place that later break out into an acute attack menacing the life of the patient if the appendix is allowed to remain. The interference with nutrition alone to a slightly involved appendix resultant on the removal of the right appendages may be sufficient to cause a rapid degeneration in that organ.

In many cases it is impossible to tell, even at operation, whether the disease was primary in the appendix or in the pelvic organs, but the correlation is easily recognized. To Clado, probably more than any other, belongs the credit of working out the ways and means of such inter-communication. His appendiculoovarian ligament, a a prolongation outward from the infundibulo pelvic ligament to the mesoappendix is easily demonstrated in the majority of cases. This fold, or reduplication of peritoneum, has besides a small artery, a branch from the ovarian, some well-defined lymphatics that pass to the broad ligament, pelvic connective tissue and internal iliac glands. The close proximity of this ligament with the appendix and its mesoappendix, together with their intimately related vascular and lymphatic systems, certainly lends plausibility to the contentions of Clado despite their disavowment by others.

Coexistent involvement of the appendix and right adnexa is so frequent that it may be laid down as a safe rule to always examine the condition of the one when operating on the other. The gynecologist of to-day investigates the condition of the appendix as a routine in the majority of his operations on the pelvic organs when there is an inflammatory involvement of the right appendages, and usually removes it on the slightest suspicion, but the universal surgeon in doing an appendectomy if he invades the pelvis at all, is usually content with breaking up adhesions to, or in the region of, the appendages, and thus many times removes the appendix when it is only secondarily involved. Only too often is his field of vision limited by the inadequate incision used, and his field of operation by his unfamiliarity with gynecological pathology.

Many observers have reported a high percentage of appendix involvements in their gynecological work. Peterson, in a series of 200 cases, found the appendix normal in only 50 per cent., while Gobrit's studies give 40 per cent. For some time past I have been especially interested in observing and recording the relations found at operation between the appendix and the pelvic organs, and present to you in this paper some to the results of such study on 746 cases. As these cover very completely the field of gynecological pathology, I have found it of interest, and an aid to their more careful study, to tabulate them as follows:

INVOLVEMENT OF THE ADNEXA.

ACUTE SALPINGITIS.

Right side	1
Bilateral	4
	5

Condition of Appendix.

Adherent to the right adnexa	1
Adherent and acutely inflamed	1
*Other involvements	1
	3
Removed	3
Pathological	60 per cent

CHRONIC SALPINGITIS.

Right side	37
Left side	23
Bilateral	187
	247

Condition of Appendix.

Adherent to right adnexa	34
Other involvements	73
	107

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*By other involvements is meant adherent other than to the adnexa angulated, indurated, etc.

Treatment.

Inverted	5
Removed	125
	130
Pathological	43.31 per cent.

PYOSALPINX AND TUBOÖVARIAN ABSCESS.

Right side	22
Left side	15
Double	88
	125

Condition of Appendix.

Adherent to right adnexa	37
Other involvements	9
	46

Treatment.

Inverted	2
Removed	51
Pathological	36.80 per cent.

RETRODISPLACEMENT OF THE UTERUS.

Number of cases	175

Condition of Appendix.

Adherent to right adnexa	2
Other involvements	49
	51

Treatment.

Inverted	2
Removed	90
Pathological	29.14 per cent.

CASES OF OVARIAN CYST.

Right side	42
Left side	11
Double	5
	58

Condition of Appendix.

Adherent to right adnexa	1
Other involvements	17
	18

Treatment.

Removed	25
Pathological	31.03 per cent.

UTERINE FIBROIDS.

Number of cases	94

Condition of Appendix.

Involved	11

Treatment.

Inverted	4
Removed	36
Pathological	11.59 per cent.

ECTOPIC PREGNANCY.

Right side	19
Left side	8
	27

Condition of Appendix.

Adherent to right adnexa	3
Other involvements	1
	4

Treatment.

Removed	5
Pathological	14.81 per cent.

PROLAPSE OF THE OVARY.

Number of cases	7

Condition of Appendix.

Involved	4

Treatment.

Removed	4
Pathological	57.14 per cent.

CARCINOMA OF THE UTERUS.

Number of cases	8

Condition of Appendix.

Involved	0
Pathological	0.00 per cent.

In two patients the appendix was congenitally absent. Ferguson, Fawcett (2) Schridde, Swan (2) Dilliard and Dorrance have reported instances of this anomaly, while Byron Robinson has reported a case in which both cecum and appendix were congenitally absent, the ilium opening into the ascending colon without any perceptible angulation.

In one case of left pyosalpinx the right tube and ovary were congenitally absent.

In the 746 cases the appendix was removed 339 times. It was pathological 244 times, giving a percentage of 32.57 for the whole series. By a glance at the separate tabulation it will be seen that this percentage was much higher in the inflammatory conditions of the adnexa, where it averaged 46.70 per cent. In the cases where the inflammatory affection of the adnexa was limited to the right side the percentage of involvement of the appendix was 66.66 per cent., while in those where it was on the left side only the appendix involvement drops to 18.42 per cent. Where the adnexa of both sides were inflammatory the percentage of appendiceal involvement was only 38.38 per cent. In all cases of right inflammatory adnexal disease the appendix was involved in 43.95 per cent. being actually adherent to the adnexa in 19.09 per cent.

In ninety-nine cases there was no microscopical evidence of disease of the appendix, and its removal was at the request of the patient. Marked atrophy of the organ was met with ten times, and in these cases the appendix was not removed.

The appendix was found in the pelvis adherent to diseased right adnexa in 75 cases. Of these twenty-five showed acute inflammatory changes while 37 were either subacute or chronic. Gas distention of the appendix was encountered three times, and in one of these cases the diameter of the appendix measured 1½ inches, its wall being as thin as small intestines. In seven cases where the appendix was removed because of dense adhesions or marked thickening with induration, the pathological report was returned "no evidence of disease." There were only four instances of retrocecal appendix encountered.

Only once was the appendix, or any part of it, found to the left of the midabdominal line, and in this case a very long appendix measuring 5¾ inches in length, was drawn well over into the left lower abdominal quadrant where it was adherent to the sigmoid. This was one of the cases that showed no microscopical signs of disease. One of the most interesting cases in the whole series was that of a right tuboövarian abscess with adherent appendix, where the lumen of the appendix communicated directly with the abscess cavity. The infection here was a colon bacillus one.

Another of more than passing interest was one of pyosalpinx, where spontaneous rupture through the abdominal wall had occurred. From the resulting sinus which communicated with the uterine cavity, through the tube, the patient menstruated regularly each month. At operation a chronically inflamed appendix, measuring 4 inches in length, was found also adherent to the abdominal wall, and fused with the tube by dense adhesions. Once only was cystic dilatation, hydrops or mucocele, as it has been variously described, met with. This appendix measured 6.5 cm. in length, 2 cm. in diameter, and was filled with gelatinous material, its walls being involved in a chronic diffuse inflammatory process.

General tubercular peritonitis, of which the adnexal involvement was only a part, was met with six times, the appendix being adherent twice.

Sex has frequently been considered as a predisposing cause of considerable importance, and appendicitis was once thought to be much more common in males. More recent investigations tend, however, to disprove this. Observations made at autopsy by Einhorn showed 55 per cent. in males and 57 per cent. in females and by Robinson 56 per cent. in males and 68 per cent. in females. This ratio is probably too high, and we should not accept autopsy findings as final in records of any disease, for the chances of error are too great. The condition of the appendix is never investigated as carefully as the other organs, and the autopsy protocols in many cases contain no data whatever regarding it. On the other hand reports by operating surgeons show a very high preponderance in favor of the male. Deaver gives 61.87 per cent. male, and only 38.13 per cent. female; but here again there are sources of possible error, for this surgeon operates on a larger percentage of males, and many females are either operated upon by gynecologists, or have the appendix removed as a routine in some other operation, where an attack would have developed later but for this prophylactic measure.

I am inclined to believe that the pathologists are nearer right in their conclusions than the surgeons.

CONCLUSIONS.

1. Disease of the pelvic organs in the female is an important exciting cause of appendicitis, and to a lesser extent the appendix may be a cause of right adnexal disease.

2. In by far the greater number of cases of coexistent pelvic disease and appendicitis, the primary source of infection is in the pelvis.

3. Involvement of the appendix is nearly four times more frequent in right adnexal disease than in left.

4. As the possibility of an involved appendix should always be borne in mind when operating on diseased adnexa, so also should the possibility of diseased adnexa be borne in mind when operating on the appendix.

5. An appendix may be macroscopically pathological, yet not microscopically so, and *vice versa*, and should always be removed, if possible, when the abdomen is opened.

6. Appendicitis in the female is associated so frequently with pelvic disease, that it should always be considered as a gynecological condition.

163 East Seventy-first Street.

A CASE OF GASTROSCHISIS, PERFORATE DIAPHRAGM, ANORCHIDY, CLOACA, ABSENCE OF COLON AND RECTUM, IMPERFORATE ANUS, SPINA BIFIDA, SPINAL SCOLIOSIS, SACRAL LORDOSIS AND SPLIT PELVIS.

BY

SAMUEL B. SCHENCK, M. D.,

Brooklyn, N. Y.

(With four illustrations.)

Many obstetricians have met with cases of congenital malformations of numerous types, among which gastroschisis occasionally occurs. The case reported here, however, presents such an unusual group of malformations that I believed it to be worthy of careful study and a complete record. After an exhaustive search of the literature I have been unable to find any case that resembled this in all of its various aspects.

Mrs. A. Z., a Polish woman of thirty-two years of age, was admitted to the Long Island College Hospital on February 24, 1919, with the following history. Family history and previous personal history were entirely negative. Menstruation began at the age of fourteen years, was always regular, occurring every four weeks, of four to five days' duration. The last menstrual period occurred during the last week of June, 1918. She has had four children, two are living and well, four and two and one-half years old, one died at the age of three and one-half years, another at the age of sixteen months. Patient does not know the cause of death, but says they had "fever." All deliveries were easy, spontaneous, a midwife being in attendance each time. Puerperia were uneventful. The children were all normally developed. Patient never had any miscarriages. On the night of February 23d she began to have labor pains. She can give no reason for this premature labor at a period of gestation slightly below eight months. The pregnancy up to this point, as far as she knew, had been uneventful. The midwife in attendance watched her during the night

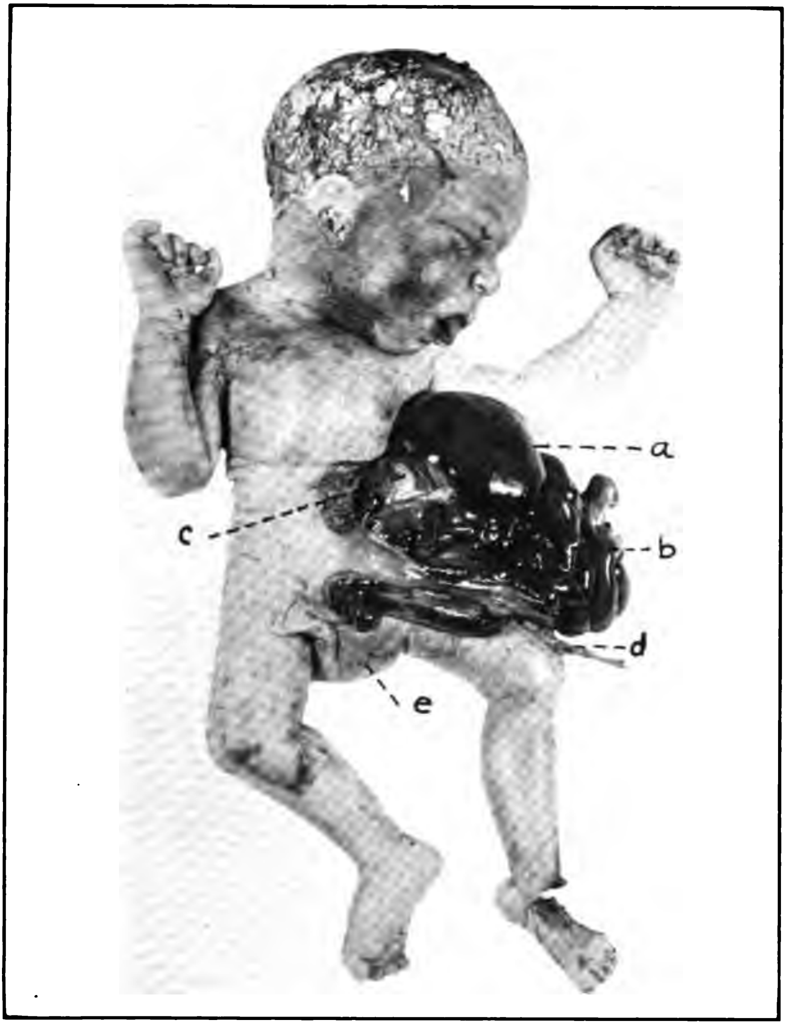

FIG. 1.—Anterior view of fetus with peritoneal sac drawn aside showing (*a*) liver, (*b*) intestines, (*c*) right kidney, (*d*) umbilical cord fused with sac, (*e*) perineal region showing absence of genitalia, and imperforate anus. Injuries of left foot, knee, and right hip are results of attempted delivery before patient was sent to hospital.

and made repeated vaginal examinations. On the morning of the twenty-fourth there seemed to have been very little progress and the midwife called a physician. He reported to me later that he was unable to make an accurate diagnosis of the position and presentation but thought he could expect a delivery by podalic version and breech extraction. After the version was done and very vigorous attempts at extraction were made with no success, he sent the patient to the hospital.

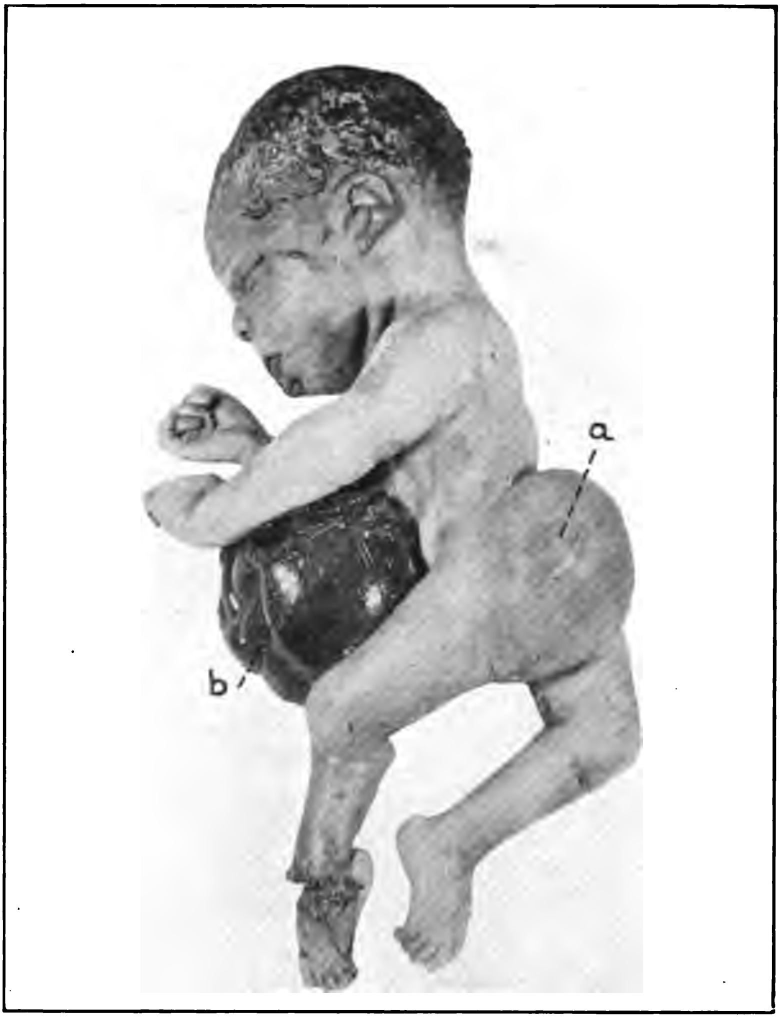

FIG. 2.—Lateral view of fetus showing (*a*) spina bifida, (*b*) gastroschisis.

Examination showed normal heart and lungs. Abdomen was the size of 7½ months' gestation. Head in fundus. Breech presentation, position left sacro-anterior. Fetal heart sounds were not heard. Pelvic measurements:—interspinous 27 cm., intercristal 29 cm., intertrochanteric 33 cm., external conjugate 20 cm. After shaving and cleansing the vulva, vaginal examination showed the fetus in left sacro-anterior position with both feet in the vagina, apparently fractured. A soft mass of some sort was attached to the posterior surface of the fetus. A diagnosis of spina bifida was made and the fetus delivered by manipulation and careful traction. The gastroschisis was then noticed (Fig. 1). The placenta was expressed twenty minutes later, after it had spontaneously separated. The delivery was done under ether anesthesia. The patient's temperature rose to 102° F. on the third day post-

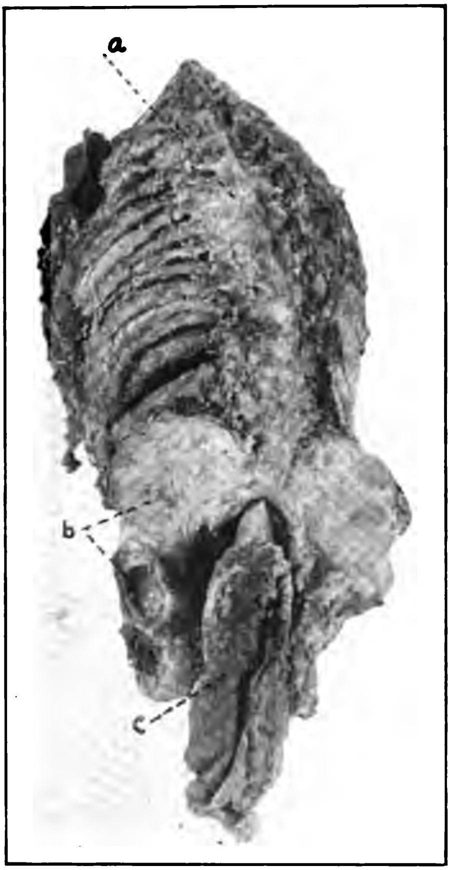

FIG. 3.—Dissection of fetus, posterior aspect, showing (*a*) deviated spinal column with deformed ribs, (*b*) pelvic bones, (*c*) sac of meningocele, after incision.

partum, then dropped to normal. She made an uninterrupted recovery and was discharged from the hospital on March 11th 1919, fifteen days postpartum. Wassermann reaction negative.

The infant measured 47 cm. in length and weighed 2240 grams. There seemed to be no abnormality of the nose, ears or mouth, no evidence of harelip, cleft palate or tongue-tie. The chest was greatly deformed as the result of marked scoliosis, the convexity of the spine was markedly toward the right. The posterior portion of each rib on the right side was very short, with a long posterior portion of each left rib, while anteriorly the right ribs were larger than the left, the sternum being toward the left of the midline. The deformity is shown in the accompanying photograph of the dissected spine and ribs (Fig. 3).

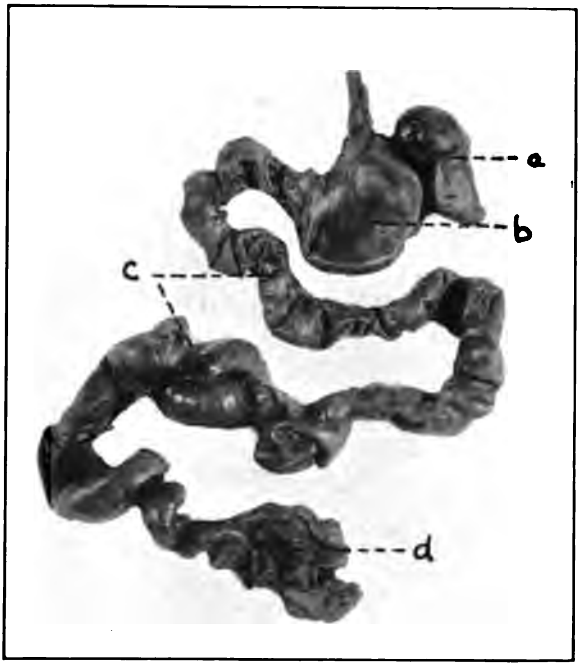

FIG. 4.—Gastrointestinal tract and spleen (*a*) spleen in its embryologic relation, attached to stomach, (*b*) stomach, (*c*) small intestine emptying directly into (*d*) cloaca, showing the absence of large intestine, cecum, appendix and rectum.

A large mass covered by a glistening membrane protruded from the abdomen through a defect in the anterior abdominal wall. At the sides and 6 cm. apart were the margins of the ununited membrane so that the viscera protruded into the sac formed by the amnion. Vessels passed from the placenta to the fetus in the walls of the sac, which was torn at its right skin insertion during labor or delivery, exposing the contents of the sac, the abdominal viscera. The peritoneum was fused with the amniotic sac. On exposing the perineum, as in Fig. 1, there was no evidence of any genital organs, but at a higher level, in the median line just below the inferior membrano-cutaneous junction could be seen a skin tab, probably the embryonic genital tubercle, measuring 0.7 cm. in length and 0.2 cm. in diameter. Just below this and 1 cm. to the left of the median line was a faint dimple in the skin about the size of a pin-head which was all that could be seen of an imperforate anus.

On the posterior surface in the median line in the sacral region extending slightly more to the left than to the right, just above the natal cleft, there was seen a mass 5 cm. in diameter, a spina bifida (Fig. 2).

The extremities showed the results of trauma from the vigorous attempts at delivery by the physician in attendance before he sent the patient into the Hospital, namely, a compound dislocation of the left ankle, an epiphyseal separation of the left tibia and fibula, below the knee and a compound epiphyseal separation of the right femur below the head (Figs. 1 and 2).

Just to the right of the liver can be seen in Fig. 1 an organ covered with small fat particles, which on dissection proved to be the right kidney lying in the same relation to the peritoneum as the liver and not retroperitoneal. The right ureter was traced retroperitoneally and terminated in the bladder which was seen to be a fairly thick-walled organ 3 cm. in diameter, mucosa thrown into folds, and containing a whitish gelatinous material.

The left kidney on dissection was found retro-peritoneally just below the costal margin, smaller than the right. The left ureter could not be traced into the bladder but was lost in the peritoneum.

The right kidney weighed 9.5 grams, measured 3.7 by 2.6 cm. The right suprarenal gland was found on the superior aspect of the right kidney, weighed 3.1 grams, measured 2.4 by 1.8 cm. No left suprarenal gland was found.

The liver measured 10.5 by 5.3 cm. and weighed 87.5 grams. A small gall-bladder 3 cm. long was found. The right superior surface of the liver was adherent to what there was of the diaphragm, there being a large aperture in the diaphragm, between the pleural and peritoneal cavities, the peritoneum being continuous with the pleura. On cutting the sternum the thymus was seen as a broad thin organ in the upper part of the pleural cavity, measuring 4.8 by 3.2 cm. and weighing 7.1 grams. The heart weighed 6.7 grams, measured 3.1 by 2.5 cm. and was normal. Right lung weighed 3.9 grams, measured 4.2 by 3 cm., had 3 lobes, the left lung weighed 3.3 grams, measured 3.1 by 2 cm. and had two lobes.

The stomach was unrotated, seemed to lie in a vertical direction and there was no distinct pyloric ridge.

The spleen appeared as an oval organ directly attached to the cardiac end of the stomach by a very short but broad peritoneal fold. It measured 4 × 1.8 cm.

The intestines were very short measuring only 93.5 cm. in all. There was, however, a total absence of the entire large intestine, including colon, cecum, appendix and rectum. The small intestine was found after careful dissection to empty directly into what I have previously described as the bladder, forming a cloaca. Figure 4 shows the stomach, spleen, intestines and the cloaca which has been opened exposing the mucosa. No pancreas could be found.

No evidence of any genitalia could be found other than the small genital tubercle mentioned above. This had, however, some resemblance to a miniature penis and a small prepuce could be demonstrated. No internal genital organs were present. Two small pieces of tissue about the size of peas were thought to possibly be evidence of rudimentary development and nondescent of testicles, but section and microscopical examination did not show any seminiferous tubules or embryonic epithelioid cords of cells, showing only muscle and connective tissue therefore the conclusion was drawn that here was a true case of anorchidy. Dissection of the bones of the lower extremities showed the lesions mentioned above. After removal of the head and extremities a dissection of the spina bifida was made. It was found that only the first sacral vertebra was present and that the meningocele protruded through a defect in the posterior portion of the spinal column below the first sacral-vertebra. Figure 5 shows the dissected spina bifida.

Dissection of the chest wall showed a right lateral scoliosis, the angle of the ribs on the right side being 8 mm. from the tip of the spine and on the left side 17 mm. from the tip of the spine. A sacral lordosis was present and also a want of union of the pubic bones at the symphysis. The lordosis was so marked that the coccyx and the lower portion of the sacrum were situated anterior to the split pubic bones.

Two interesting questions come up when an attempt is made to explain these malformations. First, what is the etiology, or rather, the teratogenesis of the condition and second, at what stage of embryonic or fetal life did the changes occur? Various theories have been promulgated, among them are: Shortness of the umbilical cord, injury to the abdomen of the fetus while *in utero*, adhesions of the amnion twisting of the vertebral column, smallness of the abdominal cavity and simple arrest of closure of the anterior abdominal wall. It is difficult to separate causes from effects, for example, we may say that the large sac will produce a short cord instead of *vice versa*, or that the absence of abdominal contents resulted in a small abdominal cavity. The most plausible and probably the true explanation seems to be a failure of fusion of the two sides of the somatopleure as they come up to form the abdominal wall. This is an exaggeration of a somewhat similar condition present in a very early period of embryonic life. In the embryo of five weeks and up to eight weeks there is a large protrusion of the celum, or embryonic abdominal cavity, into the umbilical cord. At the end of the ninth week, however, the embryo assumes a slender form and the anterior abdominal wall is closed, the abdominal viscera are in place and the cord grows rapidly in size. For some reason development was interfered with during this stage of embryonic life.

The septum transversum is present during the third week of impregnation, dividing the celum into two cavities, and contains the 'anlage' of the diaphragm and also the liver. The imperfection of the diaphragm, its appearance only in the extreme right portion attached to the liver also shows that the factor causing the arrest of development in this case occurred at a very early stage of embryonic life, probably during the very first month.

The 'anlage' of the spleen is seen first from the fifth to the eight week as a thickening of mesoderm on the dorsal surface of the mesogastrium. An arrest of development at this stage has caused the persistent attachment of this organ to the stomach as in embryonic life.

The entire absence of large intestine is quite rare. The hind-gut becomes prominent at the fourth and fifth weeks and at the end of the fifth week the caudal end of the cecum and appendix appear later as a pouch of the hind-gut. Besides the large intestine the terminal loops of the ileum originate in the hind-gut. In this fetus the hind-gut appeared solely in the form of the cloaca. Probably all the small intestine present here is that portion arising from the fore-gut, the absence of the terminal ileal loops originating in the hind-gut accounting for the very short intestine.

The pancreas could not be demonstrated here, otherwise all the structures arising from the fore-gut have developed, namely, the pharynx, lungs, esophagus, stomach and small intestine. The pancreas should appear at the end of the fourth or fifth week partly as an evagination from the duodenum and partly from the ductus choledochus.

The rectum was absent and the embryonic anal plate persisted, there being an imperforate anus.

The beginning of development of the uterus and appendages, or of the testes, occurs in the fourth or fifth week and here there were no genital organs except the embryonic genital tubercle.

All these facts show that something happened to this embryo during the fourth or fifth week of its life which caused these malformations and anomalies of growth. Just what this was cannot be definitely stated but we have no reason to assume that it is any different from the etiological factors causing adult-pathology, namely, microörganisms, toxins, or trauma. The results, however, are developmental anomalies because of the physiology of the embryo at the time the morbid factor exerts its malign influence.

In this case we have no clue as to what the ultimate factor really was which caused the disturbance as the patient tells us she was perfectly well during the early period of her pregnancy, as she was, in fact, during her entire pregnancy. The Wassermann reaction of the mother was reported negative.

While our present knowledge of antenatal pathology can explain the processes that occur and can explain the congenital mal-developments and anomalies we must now look forward to the time when we shall be able to give the direct etiological factor even with the certainty with which we discuss the etiology of some of the adult diseases and when, as a result, we shall be able to offer some rational advice and real help as to prophylaxis and treatment.

1458 Union Street.

NEW FORM OF OBSTETRICAL DELIVERY TABLE.

BY

HAROLD C. INGRAHAM, M. D.,

New York, N. Y.

(With two illustrations.)

An important part of the conduct of a maternity case is the mechanical control of the patient during delivery. In order that an aseptic technic may be carried out, we must secure adequate exposure of the patient, protection of the parts not aseptic and facilities for rapid change of patient's posture. As the existing delivery tables did not give the security and control that we desired, the table about to be described was designed and has been in successful use at the Woman's Hospital for the past two years.

The standard of the table is made of 1½-inch enameled pipe, thus giving both strength and lightness. It is 5 feet long, made of two parallel pipes, the lower 6 inches from the floor, and the upper 12 inches above this. These unite with the upright pipes or legs. At the foot, the legs are continued and connected to the top of the table by hinged joints; making the table 3 feet in height. At the head, the legs stop at the upper of the parallel bars, or 18 inches from the floor. This end of the table is supported from the standard by a ratchet brace. The lower bar at the foot of the table gives firm support for the operator's foot when working at that end of the table. The top is of Monnell metal, 6 feet long and 2 feet in width. This gives ample length to the patient in the recumbent position, and the width is adequate and does not allow the patient to move beyond the operator's reach.

Two inches from the sides and 1½-inches below the top surface, running parallel to the side of the table throughout its length, and attached at the head and foot, is a nickel plated bar 1 inch in diameter which is used as a pulling bar and has the advantage over the rope, sheet, spring chain, etc., of other tables, in that it is stationary and not lost by the patient when let go of. Also, the length does not have to be adjusted for each patient. On this is a sliding ring with strap for fastening the wrist. This allows a free movement of the wrist as the ring slides on the pulling bar and thus needs no further adjustment if the patient's position is changed on the table. It does away with the patient's idea that her hands are fastened. A sliding adjustable socket, also attached to the pulling bar, can be moved along the sides of the table. In this fit the shoulder braces which are put in place to keep the patient from shoving up on the table when either in the dorsal, lithotomy or Trendelenburg positions. At the foot of the table are the two leg holder sockets. These are firmly attached to the ends of the table top and not to the sides. This allows the buttocks of the patient to be brought well over the end of the table when in the lithotomy position, without overflexion or abduction of the thighs, thus somewhat relieving the tension on the perineum and giving the operator free space for any manipulation. In these sockets are placed the two adjustable leg holders. Attached to the right side at the foot of the table is a swinging tray, 19 by 13 inches. This tray can be swung in any position from the right side to the foot of the table, and can be used to hold sterile solutions or instruments. It is at the level of the table top and when swung parallel with the foot can be used to lay the baby on

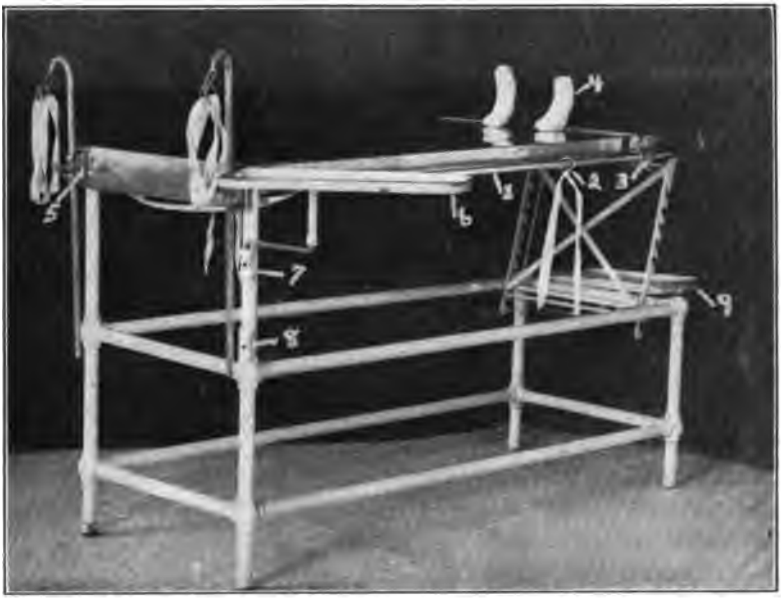

Fig. 1.

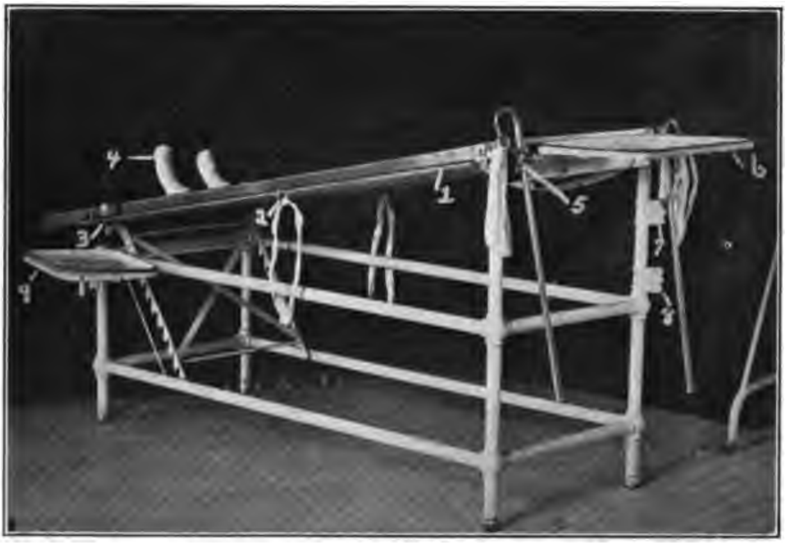

Fig. 2.

Ingraham's Delivery Table.

Explanation of Figures.

(1) Side bars to which wrist strap with sliding ring (2) is attached. (3) Sliding adjustable socket for shoulder braces (4). (5) Leg holder sockets. (6) Swinging tray with two additional sockets shown at (7) and (8). Anesthetist's tray (9).

after the delivery. This enables us to do away with the possibility of breaking the asepsis by having a pull-up end to the table, which usually becomes unsterile. The sockets for the arm of the tray may be adjusted at such a height, that when the tray is used in that socket it just allows the tray to swing over the operator's knees when sitting at the foot of the table. At the head of the table, on the left side, is another swinging tray 11 by 16 inches used as an anesthetic tray. This may be swung underneath the top of the table or to the side. The Trendelenburg position with a drop at the head of the table up to 18 inches is obtained by the adjustment on the rachet brace.

We feel that we have secured a table simple in design and of useful proportion without the danger of asepsis of an extension piece. It has been possible to readily secure all positions necessary during delivery and especially in the pulling rods with wrist straps, plus the adjustable shoulder braces, have we accomplished a satisfactory method of the controlling the patient.

133 East Fifty-seventh Street.

POSITION OF THE NAVEL OF MAN.*

BY

NOBUTARO NIWASE,
Tokyo, Japan.

Since the first generation after Adam and Eve, who are said, humorically, to have had no navels because they were created by God, all the human beings were accustomed to regard the navels as objects merely for comedy or as a matter of nature. Though the navels are significant and important in the obstetrical and anatomical point of view, their position has been neglected by physicians, with exception of a few authors, who measured the distance from the navel to processus xyphoideus sterni or to symphysis ossis pubis or to the line combining the both spinæ iliacæ anteriores et superiores, etc. These chiffers are extraordinarily different individually so that we can not express the position of the navel shortly and clearly. They do not always exist in the midst of linea alba, *i.e.*, of the line combining processus xyphoideus and symphysis, nor in the lower third thereof; their distance from the spina line above described variates so wide as from 2 to 10 cm. I intended to express the position of navels more precisely geometrically and measured their distances from various fixed points upon more than 1000 persons and found a typical geometrical figure with reference to the position of navels. This measurement was begun in December, 1918, at the Yoshiwara Hospital for Prostitution at Tokyo, Japan, and concluded in March, 1919. In accordance with this publication I acknowledge my pleasant obligation to express hearty thanks to Dr. Sakae Sate, Director of this hospital, Dr. Richo Sakamoto, By-Director, and colleagues for their kind supports.

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*From the Yoshiwara Hospital for Prostitution.

Note.—The Editor desires to submit this contribution to his readers in its original form rather than to introduce his own attempts at changing the author's idiomatic expressions, for obvious reasons.

Materials and Methods.—As materials I employed 1000 prostitutes treated in this Hospital, who were from nineteen to forty-five years of age and of course of female sex, as well as some male adults and some new-born children out of the hospital. As the method for measurement I used principally a rolling centimeter measure. I measured the distances from spina iliaca anterior superior to the upper end of the middle line of symphysis, from these

TABLE I.—868 PROSTITUTES WHO HOLD U. R. T.

Length of a side	12	13	14	15	16	17	18	
Age								Sum
19	0	6	20	26	10	2	2	66
20	1	4	31	77	11	0	0	124
21	0	6	38	56	13	2	1	116
22	1	12	29	55	13	1	0	111
23	0	6	20	54	9	2	0	91
24	1	4	25	39	7	1	0	77
25	0	8	22	37	8	2	0	77
26	0	5	17	34	6	1	0	63
27	0	4	16	25	3	1	0	49
28	0	3	12	12	1	1	0	29
29	0	2	2	8	1	0	1	14
30	0	1	3	5	2	1	0	12
31	0	1	2	9	0	1	0	13
32	0	0	1	2	0	1	0	4
33	0	0	2	2	0	0	0	4
34	0	0	0	2	0	0	0	2
35	0	2	2	2	0	0	0	6
36	0	0	2	0	0	0	0	2
37	0	0	0	0	1	0	0	1
38	0	0	1	3	0	0	0	4
39	0	0	1	0	0	0	0	1
40	0	0	1	0	0	0	0	1
45	0	0	0	1	0	0	0	1
Sum	3	64	247	449	85	16	4	868

two points to the under end of the navel and from its upper end to the inferior end of processus xyphoideus per person laying on the back, besides the length and weight of each body.

Results and Conclusions.—It attracted my attention that in most cases the length between navel and spina, spina and symphysis, symphysis and navel are quite the same; in other words, the navel exists on the vertex of the right triangle drawn, though not on a plane, but on an irregular spherical surface and stood on the line combining symphysis and spina iliaca anterior superior, in 86.8 per cent. of materials subjected at my disposal. This geometrical figure with reference to the navel I will call later the umbilical right triangle and conveniently use an abbreviation U.R.T. for it.

TABLE II.—132 PROSTITUTES WHO DO NOT HOLD U. R. T.

Length of the line combining symphysis and spina	11	12	13	14	15	16	17	18	Sum
Those who have an umbilical triangle composed of 3 different long lines.	1	5	9	7	1	0	2	0	25
Those who have an umbilical isosceles triangle stood on the base spina-symphysis."	0	2	8	17	13	3	0	0	43
Those who have an umbilical isosceles triangle stood on the base navel-symphysis."	0	1	8	20	24	4	1	1	39
Those who have an umbilical isosceles triangle stood on the base "navel-spina."	0	0	1	4	0	0	0	0	5
Sum	1	8	25	45	42	7	3	1	132

As seen from the Tables I and II, the U.R.T. is independent on age, possessing in most cases a side of 14 or 15 cm., when it is concerned with Japanese women of from nineteen to forty-five years.

But as it is certified in a few cases of new-born children placed at my disposal that U.R.T. consists of such a short side as ca. 5 cm., the dimensions of U.R.T. may be said to increase in accord with ages, when it is concerned with less than nineteen years.

Length and weight of a body are very different individually and have no reference to U. R. T. The difference of nullipara or multipara does not influence U. R. T. Considering the position of the navel on the line between processus xyphoideus and symphysis, the following interesting classification will be obtained:

TABLE III

Position with reference to the middle point of linea alba	Who hold U. R. T.	Who do not hold U. R. T.	Sum
on	192	33	225
under	56	24	80
upper	620	75	695
sum	868	132	1000

As is evident from the Table III, the navel lies in most cases under the middle point of linea alba rather than on it. But from a statistical point of view U. R. T. seems to be more important than the position on linea alba.

Most of those who do not hold U. R. T. belong to general obesitas or localized corpulence of baley, slenderness, pregnancy or abdominal diseases as well as abnormal basins. There are several kinds of localized fattyness in the region of abdomen, *i.e.*, in the upper, in the middle or in the lower part, varying in their form too, as diffusely spheric, irregularly stretching out or flowng to sides and so on. Endly considering that the line combining symphysis and spina anterior superior, remains constant and considering that the line combining navel and symphysis, subsequently the difference of the two lines becomes longer according to progress of pregnancy, it may be diagnosed from abnormal U. R. T. in what month of pregnancy the examined stands.

CLINICAL CASE REPORTS.

REPORT OF A CASE OF FULL-TERM ECTOPIC PREGNANCY.*

BY

REGINALD M. RAWLS, M. D.,

New York.

Mrs. X, a primipara, aged nineteen, first seen in the twenty-second week of her pregnancy. At six weeks a catheter or sound was introduced which for several days caused considerable bleeding and clots. It was supposed an abortion had been accomplished, until four days before consulting me, when her abdomen had suddenly enlarged. On examination the uterus was symmetrically enlarged and the fundus was just above the umbilicus and a placental bruit was distinctly heard. Therefore a diagnosis of intrauterine pregnancy was made, but further advanced than the history indicated.

Five months later or about seven days before full term, I saw the patient in consultation. She had been in good condition until the previous week when she was attacked with pain over the gallbladder region accompanied by nausea, vomiting, constipation and the voiding of small amounts of high colored urine. At this time the skin was slightly jaundiced and patient was treated by catharsis, diet and colonic irrigations, but without benefit. When seen her temperature was 101, pulse 144 weak and irregular and respiration 30 and difficult. There was a distinct surgical abdomen and palpation revealed, extending from the upper left quadrant to the umbilicus, a firm tumor mass which shelved off into an indefinite cystic mass. Percussion gave dulness which was well marked in the flanks. On the left side, just below the umbilicus, a fetal heart was heard and below this a placental bruit. Vaginal examination showed the cervix displaced to left, the external os admitting the tip of the finger only to the internal os. Posterior to cervix a cystic mass was felt with an indefinite firmer mass above and to right and below the level of the internal os, these presented a smaller hard mass suggestive of a fetal small part. A tentative diagnosis was made full-termed pregnancy complicated by toxemia with either an incomplete rupture of the uterus, or a twisted pedicle ovarian cyst. Extrauterine pregnancy was ruled out because of my findings at the fifth month.

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*Presented at a meeting of the New York Obstetrical Society, April 8, 1919.

Patient was sent to the Woman's Hospital and about seven hours later temperature was 101.2, pulse 144 and respiration 36 and the fetal heart was again distinctly heard. Eight hours later, patient's condition was much improved, temperature 100.2, pulse 138 and respiration 30, vomiting had ceased and the urine was increasing in amount and only showed marked traces of albumin. At this time the fetal heart was not heard and no fetal movements were observed. As the mother was now only to be considered, operation was deferred.

The next day patient was markedly improved, temperature 99, pulse 130, and respiration 30. The blood examination gave red cells: 3,528,000, hemoglobin: 52 per cent., white blood cells: 10,400, with polyps: 73 per cent. and lymphocytes 27 per cent. Twenty-four hour amount of urine, 2200 c.c., trace of albumin, no acetone, no diacetic acid, urea: 0.63 per cent., 12 gm. in 24 hours. Blood Analysis showed carbon dioxide in blood 23, urea marked reduction, too low to read. At this time Dr. F. A. Dorman saw the patient in consultation and advised further waiting as he thought the case one of probable full-term ectopic gestation.

On the sixth day after admission to the hospital, an abdominal section, under nitrous oxide and oxygen anesthesia was done. A further examination at this time failed to throw any further light on the case. As there was considerable vaginal bleeding, from the preparation and examination, necessitating a vaginal pack, a sound was not passed into the uterus.

A median incision was made from five fingers below to three fingers above umbilicus. The first incision through the peritoneum was followed by a gush of bloody serum escaping under considerable pressure. The incision was then enlarged and revealed a fetus with its head toward the left of the sternum showing distinctly through a thin sac. The fingers were passed rapidly around this sac which was thicker posteriorly and it was found to be adherent at intervals to the omentum, the large intestine and the lateral parietal peritoneum and that its pedicle was in the region of the left broad ligament. The thin membrane anteriorly was then opened and a considerable amount of amniotic fluid was evacuated and a full-term child extracted. On separating the adhesions, it was found that the pedicle was at the site of the left tube and the upper part of the broad ligament above the ovary and extended to the uterine horn, but did not involve the fundus of the uterus. With three uterine clamps the pedicle was firmly held and the placenta and membranes were removed with a minimum loss of blood. It was found that the uterus was enlarged to the size of a four months' pregnancy and had been carried backward, upward and to the left. The pedicle was then secured with ligatures and sutures and portions of membrane were now removed from the omentum, intestines and peritoneum without any undue loss of blood, and abdomen closed without drainage. The patient made an uneventful recovery and was out of bed the fourteenth day.

The pathological report was as follows:

Diagnosis.—Tubal gestation, full-term child (macerated). General anasarca of the infant.

Macroscopical. Child and Placenta.—Macerated female infant weighing 9¼ pounds. The child shows no deformity, is 55 cm. long. There are all signs of maturity. No caput succedaneum. *Placenta with Cord.* The former shows two portions, one measuring 15 cm. in diameter which is about 3 cm. thick. The maternal side shows a very short, thick pedicle which is apparently composed of musculature. This thicker portion of the placenta goes over into a thin disc-like structure measuring 18 by 12 cm. being about 1 cm. thick. The maternal part of this latter tissue is smooth. The membranes are attached to the placenta. The umbilical cord shows serohemorrhagic imbibition.

Microscopical.—Sections from the pedicle show an edematous smooth musculature. Other sections show placental tissue, some of it attached to thin strands of smooth musculature, probably tubal. No sections show mucosa; no evidence of uterine musculature. The placental villi are largely macerated. A large part of them is degenerated.

The section of the infant shows a serohemorrhagic transudate in the abdominal, the pleural and the pericardial cavities. The cheeks and the eyelids show marked anasarca. The brain itself is macerated, extremely soft. The internal organs show no anomalies.

350 West Eighty-eighth Street.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of April 8, 1919.

The President, L. Grant Baldwin, M. D., *in the Chair.*

Dr. Frank R. Oastler reported on

THE SUCCESSFUL TREATMENT OF A CASE OF TOXEMIA OF PREGNANCY.

Mrs. H. P., aged twenty-seven, family history of no importance. Personal history: the usual diseases incident to childhood but no evidence of renal irritation. Present illness: Patient was seen for the first time seven months ago. About a year prior to this after being pregnant about six and one-half months was delivered by vaginal Cesarean section. Diagnosis: threatened eclampsia. She apparently recovered completely from her toxemia. At the time of my first visit she told me that she was about seven months' pregnant and that for the past two weeks she had suffered from swelling of hands, face and legs, had been short of breath, had vomited several times with associated headaches. Examination of patient revealed the following: Face quite white, eyelids very much swollen; legs, hands and abdominal wall markedly edematous, speech slow and measured. Respiration 24, pulse 110, murmur over second space to the left of sternum; blood pressure, systolic 170, diastolic 80. Urine 30 ounces in twenty-four hours, 75 per cent. albumin by volume, many hyaline and granular casts, urea 240 grains per day, highly acid, marked trace of acetone, gravity 1018, carbon dioxide absorption of blood 42. The uterus contained a small fetus and was enlarged to the umbilicus. On account of the fact that patient's husband was in France she was very anxious to give birth to a living child. After consultation it was decided to give her three days in which to improve after which the pregnancy would have to be terminated if none occurred. Treatment consisted in absolute quiet in bed, high colon irrigations of plain water, milk and starch died by caloric measurement, 3500 calories per day; plenty of water to drink, nitroglycerin and acetate of potash; one hot pack daily. By the end of the third day all symptoms had largely disappeared, the blood pressure dropping to 128 systolic, diastolic 80, and the urine containing 5 per cent. albumin with many hyaline and granular casts. She was passing 60 to 70 ounces of urine per day. Her condition had improved so much that it was decided to continue treatment and this was done under continued observation until she had passed the eighth month. The edema disappeared, the urine averaged about 5 per cent. albumin, headaches did not recur, vomiting occurred three or four times, the blood pressure ranged between 120–130, systolic 75, diastolic 80. During this period the child increased in size very little. It was thought, however, that there was a possibility of getting a living child at eight months. The patient was getting weaker under the restricted diet. A bag was introduced and a baby girl was born without accident, weighing 2 pounds 3 ounces. The mother made an excellent recovery and the evidences of toxemia disappeared entirely after about six weeks. The cervical scar following vaginal Cesarean section made dilatation somewhat difficult. The baby dropped to 2 pounds 1 ounce in twenty-four hours. She was cotton wrapped and placed in a large room which was kept constantly at proper temperature and moisture. She was fed diluted breast milk with an eye dropper and later with toy nipples. An interesting feature was the fact that the child would not digest one mother's milk but improved immediately on mixed mother's milk, which was continued until the child was six weeks old when it gained on a regular wet nurse. Another difficulty also occurred—the bones of the skull would not harden and evidences of malnutrition appeared though the child gained steadily in weight. A swelling developed in the right femur and the child became fretful and cried when she was moved. She was taken from the wet nurse, given orange juice and modified dried milk and from that time to date improved steadily, now weighing 8 pounds 12 ounces. All the evidences of malnutrition have disappeared and the skull is ossifying normally.

The interesting features of the case are (1) the apparent hopelessness of continuing the pregnancy at the start, (2) the satisfactory result of continued careful dietetic and medical treatment, (3) the value of the bag for induction of labor in a critical case, (4) the size of the child, (5) the possibility of keeping a child of that weight alive due to proper surroundings and food, (6) the difficulty of the premature child to develop bone, (7) the value of orange juice and dried milk modifications in such cases.

DISCUSSION.

DR. N. SPROAT HEANEY, Chicago.—"These instances of toxemia of pregnancy are always very interesting and I know of nothing in obstetrics that can puzzle and tax a man's judgment quite as much as such a case, say at the seventh month, to decide whether we had better carry the case along until near term or consider it a bad job and in the interest of the woman's health deliver her, in spite of the nonviability of the child, and hope for better luck at another pregnancy. The cases which are the most bothersome are the ones with high blood pressure without albumin. I do not believe it has yet been decided where the principal lesion is situated in these cases. I do know, however, that we may easily carry these patients along on treatment too long, with the result that permanent damage is done and a permanent high blood pressure results. I am not inclined to keep these patients on treatment to the extreme that some do. A patient with a blood pressure of 160 at the sixth month, with no albumin, I would put her to bed, increase the carbohydrate diet, decrease the protein intake as much as possible, alkalinize the urine and secure free elimination by the bowels. If this does not cause a prompt lowering in the blood pressure, and if in spite of treatment the blood pressure continues to rise, I think too much damage will be done in such a case trying to carry her to the period of viability of the fetus. If the patient is at the eighth month, I am inclined to induce labor after a very short course of the above treatment, feeling that the interests of the mother are compensated for by a slightly added risk to the child.

"I had one patient some eight years ago who gave me a valuable lesson. She had a blood pressure at the fifth month of 150. It went up in a couple of weeks to 160. We subjected her to the most rigorous management: hot baths, sweating, purging, diet and alkalies, but the blood pressure increased until at the 32d week it was 180. About the 34th week the blood pressure went up within forty-eight hours to 210, the urine remaining free of albumin all this time. I was very uneasy regarding her all this time but could get no help from the two or three consultants who saw her with me. When the blood pressure reached 210, however, I advised prompt induction of labor. This was early in the morning and no albumin was present. I could not secure the right to induce labor until noon, by which time a considerable amount of albumin had appeared in the urine, headache had come on and irregular contractions of the pupils had also appeared. Labor was induced successfully, the patient avoided any immediate difficulty. It has now been eight years since this confinement and the blood pressure remains at 180 and the patient is now less than thirty years of age. It would be absolutely dangerous for this patient ever to get pregnant again. Had I induced labor some three weeks earlier, we might have had an increased danger to the child but the patient's present condition might have been much better than it now is."

Dr. J. O. Polak.—"There is one interesting point which I think Dr. Oastler might have brought out in the treatment of these cases. He was evidently dealing with a hepatotoxemia and it seems to me that it is very important in determining what we shall do in these cases to learn whether we are dealing with a hepatotoxemia or one in which we have an actual kidney lesion. In the one, we produce, by carrying our patient on, irreparable damage to the kidney structures. In the other, as shown by the doctor's case, by the rest and medication, he had an immediate fall in the blood pressure and immediate diminution in the albumin. It is very important to make a distinction between those two types, not only as to what to do, but how far it is safe we are justified in carrying these pregnancies along.

"We have had a very considerable experience in carrying both of these types along and in the cases which we consider the nephritic type, under rest the blood pressure does not come down or fall to any degree, and the albumin though it may be reduced ½ gram or 1 gram to the liter, never absolutely disappears, and there is a condition of the kidney produced which does not clear up, and it is sometimes two or three years before the patient is free from that kidney lesion. In our opinion the persistent blood pressure with the patient at rest is the determining factor.

"I would like to say that the Breck feeder is a very admirable little thing for premature babies."

Dr. G. H. Ryder.—"I would like to ask if the woman's teeth were examined after pregnancy."

Dr. Frank R. Oastler.—"With respect to Dr. Ryder's question about the teeth: I did not examine the teeth as the patient did not complain of anything about the teeth.

"With respect to the question of high blood pressure, it seems to me that that is probably one of the most important guides that we have in toxemia of pregnancy. My experience has been the same as the last speaker recited. During the last two months I have had two cases of high blood pressure of the same type; that is, without any condition which was abnormal in the urine. One was a woman at six and a half months with a blood pressure of 210 and with a heart lesion, and she was edematous. I put her to bed and kept her there until she passed her eighth month, hoping to get a live child. The edema disappeared, but the blood pressure continued. At the eighth month I induced labor with a bag. She kept the bag in for five hours altogether and suddenly had one convulsion and died in one and a half hours. Her urine was perfectly normal.

"I have a patient who has just left the hospital. She was a little over seven months. She had previously had a perfectly normal pressure. I had her come to my office and found the pressure about 145. In ten days it went to 210, without a sign in the urine. I carried her along for ten days and induced labor, she got through without any trouble whatsoever, and her blood pressure is back to normal again. The urine at no time showed any evidences of abnormality.

"It seems to me when we get these cases of blood pressure without any urinary symptoms we are treading on very dangerous ground, but the thing which is most difficult for me to determine in these cases is when to interfere. In other words, how long to let them alone before it is time to do something, whether it is a matter of a few days or whether you can watch them for a week or two. These other cases that come down under treatment are much more favorable, but exactly when to interfere in cases of high blood pressure without urinary symptoms is a thing I have not been able to determine."

Dr. W. H. Cary.—"By normal urine, do you refer also to the functional kidney tests?"

Dr. F. R. Oastler.—"No, I refer to the urea, the nitrogen partition and the absence of albumin, and not to the functional kidney tests."

Dr. R. M. Rawls reported a case of

FULL-TERM ECTOPIC PREGNANCY.

(For original article see page 53.)

DISCUSSION.

Dr. J. O. Polak.—"I reported a case here some time ago, of full-term abdominal pregnancy, that stirred my associate, Dr. Beck, to do a great deal of work on this subject, and he has taught me some things that may be of interest. We have gone over 259 histories of reported cases and there are some very interesting points about them. First, the diagnosis of these cases was made in a very large proportion of the cases, and they all showed a condition of the abdominal wall and a condition of the patient which was different from an intrauterine pregnancy in the distribution of the superficial veins of the abdomen and the apparent toxemia of the patient, which I did not get in your report. Was she toxic?"

Dr. R. M. Rawls.—"That was suspected as the diagnosis in the first place."

Dr. J. O. Polak.—"The next interesting point was the handling of the placenta in these cases, and, as you know, there are two general plans of handling the placenta, one of packing the sac, and the other the removal of the placental mass. There were several cases where inadvertently an attempt was made to drain the sac and the drain had come out much earlier than supposed and the wound had closed and the placenta had disappeared. This stimulated Dr. Beck to do some work on dogs and he is going to make a very complete report of it, and it is rather interesting. We took a dog and took a Cesarean section placenta, weighing, after we had cut down the loose edges, 400 grams, and put this placenta in the peritoneal cavity of a dog and left it there. Six weeks later we opened the dog and there was not a trace of the placenta anywhere in the dog. That experimental work confirmed these accidental reports of the handling of the placenta, and we are now looking forward to the time when we get the next case so we can sew it up tight and allow the placenta to be taken care of just as the products of ectopic gestation are taken care of."

Dr. N. Sproat Heaney, Chicago.—"I would like to ask Dr. Rawls a question regarding his case. In this instance the fetus was dead so that the feared placental hemorrhage did not have to be taken into consideration. If, however, a living placenta had been encountered, a serious hemorrhage may have occurred. What was the mechanics of this case? Would it have been possible to have completely obliterated the placental site satisfactorily and to have avoided this much-feared hemorrhage? Or, would he have had to do a marsupialization? Or, as Dr. Polak suggests, would he have had—in order to avoid marsupialization—to leave the placenta intact and sew up the abdomen? I am very pleased with this latter suggestion. It certainly seems very much safer than marsupialization.

Dr. G. H. Ryder.—"I would like to ask if this patient had any special cramps in the latter part of her pregnancy, or any time during pregnancy, more than a woman ordinarily would have."

Dr. R. M. Rawls.—"In answer to Dr. Heaney's question in regard to the site of the placental attachment, I would state that it would have been very easy if the child has been alive to encircle that pedicle with three clamps, even though the child had died, but it governed us in delaying operation after we found that the child was dead, hoping that the placenta bleeding would be less; but it would have been very easy to have enucleated the thing with clamps. It was a pedicle that you could easily reach around with three clamps.

"In regard to Dr. Ryder's question as to cramps: I saw that patient, as I stated, at the twenty-second week of pregnancy. Up to that time she had thought an abortion had been done on her by passing a sound. She said that four days previous to that time the abdomen had suddenly enlarged, but with no symptoms of cramps. Seven days before term I was called to see her with a history that one week before that time she had pain in the abdomen in the region of the gall-bladder and vomiting. She could not retain any nourishment at all and there was a discoloration of the skin, so the family doctor made a diagnosis of cholecystitis. Those were the only two instances."

Dr. NOBLE SPROAT HEANY, of Chicago, by invitation read a paper, entitled

THERE SHOULD BE BETTER TEACHING OF THE MEDICAL STUDENT REGARDING ECTOPIC PREGNANCY.

(For original article see page 17.)

DISCUSSION.

DR. GEO. GRAY WARD, JR.—"I feel that this is a very timely topic and I am quite sure that a great many of the text-book teachings are in need of a certain amount of revision. I think the subject which Dr. Heaney has brought before us is one that not only the student but all have got a good deal to learn about.

"I have been much interested in the diagnosis of ectopic pregnancy and at my request one of my assistants at the Woman's Hospital, Dr. Farrar, has taken up the subject and has made a study of our cases to see if we could add anything of value from our records. Of course, in speaking of hospital records we must always bear in mind that many records have errors in them. We are apt to take as final, statements in the histories of hospital cases, yet we know that very often in revising histories taken by our internes we must often change the history very materially, and I therefore think it behooves us to pay more attention to the careful taking of histories. It seems to me that the gist of Dr. Heaney's paper is that more care should be taken with our histories. I have been endeavoring for some time to try to point out to my students the danger of snap diagnoses which are so commonly made and that there is no short road in the making of a diagnosis in a puzzling case. It cannot be arrived at except by a very careful study of the history and that means a very careful taking of the history. It requires a sharp lawyer sometimes to elicit the facts in a legal case and it requires a lawyer's methods to get the actual facts in many of our surgical cases. The patients are frequently very vague and inaccurate in their statements and we have to cross-question them thoroughly and give their answers a thorough analysis in order to arrive at the truth.

"The result of the investigations which I have had made of the ectopic cases at the Woman's Hospital are of considerable interest and I present herewith a summary. During the last ten years there were 309 cases of ectopic pregnancies. Of these 309 cases, 124 were private patients, in which no history was recorded in the hospital records. That, of course, as you know, is one of the problems of those of us who are interested in hospital management—how to get the histories of the private cases. It is an extremely difficult thing to accomplish and yet there is a tremendous amount of material going to waste which could be studied if we only could insist upon having a proper history recorded of these cases. There were 186 cases which were recorded with a history. It was found that the history preceding the ectopic pregnancy was sometimes of value, pointing to infection of the tube prior to the pregnancy, or something that might cause mechanical alteration, for instance, cases with absolute sterility prior to the ectopic which might be the result of congenital defects in the tube, possibly the numerous convolutions present in the early fetal life had not become straightened out, or some structural change in the tube, due to lack of development or malformation, which would give rise to absolute sterility for a long period before the ectopic occurred. We found 16.9 per cent. gave such a history out of the 186.

"There were 26.1 per cent. with one child prior, making 43 per cent. altogether of the 186 who had been previously sterile or had only one child at which time possibly some infection might have occurred. A history of prior infection, as salpingitis, gonorrheal or otherwise occurred in 10.8 per cent. In 2.1 per cent. there had been previous ectopics. In 10.5 per cent. previous abdominal operations had been done of various kinds, either on the tube or on the tube and ovary, making a total altogether of 66.4 per cent. in which there had been a prior history of something that might have a bearing as an etiological factor.

"Now, as to the relation to menstruation, there were 34 per cent. in all of these 186 cases that gave a history of being overdue. That is only about one-third. One per cent. were nursing at the time and had the amenorrhea of lactation. There were 30 per cent. in which the onset of the attack occurred at the expected time of menstruation. In 35 per cent. the onset occurred after the cessation of a normal menstrual period.

"Coming to the question of the complaint on entering the hospital:

"There were 29 per cent. that complained of pain alone, and of pain and discharge only, or 'spotting,' 26 per cent.; pain and bleeding, 39 per cent.

"Therefore, the cases that came into the hospital complaining of pain with or without bleeding, this pain being the predominant symptom, were, altogether, 95 per cent. of the 186, so that nearly all the patients came in for pain, either associated with or without bleeding. Two and one-tenth per cent. complained only of bleeding without any pain. One case only, 0.53 per cent., came in simply because she had a tumor, and another one came in because she said her womb was "dropped."

"As to the character of the pain. In 25 per cent. the pain was characterized as knife-like, stabbing, lancinating pain. Seventy-five per cent. complained of cramps, or bearing-down, but not of the lancinating, sharp-like pain. This seems quite an important thing. We teach, or the text-books teach, that sharp, stabbing pain is the most predominant symptom, while this study seems to show that only 25 per cent. of the cases have this type of pain.

"The symptoms came on as an acute attack, that is, suddenly, in 27 per cent. of the cases, accompanied by fainting with the acute onset in 18 per cent.; dizziness with the acute attack, 4 per cent. Altogether this acute attack, accompanied with fainting and dizziness and sudden onset, occurred in 49 per cent., or one-half of the cases. It was noted that vomiting preceding or during the attack occurred in 23 per cent.; 4 per cent. were nauseated; 7 per cent. complained of painful micturition; 6 per cent. of painful defecation, making a total of nausea, vomiting, painful micturition and painful defecation; in other words, peritoneal irritation, of 40 per cent. Thirteen per cent. complained of painful micturition and painful defecation combined, disturbance due to peritoneal irritation. The number showing acute onset and peritoneal irritation totaled 89 per cent.

"As to blood count. It was noted that the leukocytes, when there was active bleeding (blood being poured out into the peritoneal cavity), readily rose as high as 20,000 to 30,000, but dropped on the subsequent count in twenty-four to forty-eight hours. If there was a fresh outburst of bleeding, it seemed to start up the leukocytosis but the resistance was not maintained as it is in acute conditions such as pus tubes. This is a point of considerable interest to me in the differential diagnosis of cases of acute pyosalpinx, as is also the temporary leukocytosis, the result of peritoneal irritation from internal hemorrhage. The hemoglobin was observed not to drop immediately in cases of ectopic pregnancy of long duration. There would be a gradual lowering of the hemoglobin percentage, but the amount of hemoglobin did not seem to suddenly drop.

"The temperature records in the early cases showed that there was practically little or no temperature. After rupture when blood was in the peritoneal cavity, there was a temperature of 100–110 ° F. It is interesting to note that the diagnosis preceding the operation was recorded in eighty-eight cases of the 186. In these eighty-eight cases, fifty-six were correctly diagnosis. In other words, 63.6 per cent. Seventeen cases were mistaken for salpingitis, three cases for ovarian cyst, four for pelvic abscess, two for appendicitis and six for retroversion, or fibroid.

"The summary as to the chief points in the diagnosis from a study of these cases was that the prominent symptoms were usually one-sided, cramp-like, bearing-down pelvic pain, associated with enlargement of the tube or mass, whether accompanied by bleedng or not, especially if the pain occurred in attacks with vomiting and painful micturition or defecation. In other words, pain plus peritoneal irritation due to the escape of blood into the cavity. The differentiation from pus tubes seemed to be shown best in pus tube cases where mistakes had been made in diagnosis, that the pain was bilateral, the temperature was higher, the leukocyte count remained constantly up instead of dropping after the first bleeding, and, of course, where there is an overdue period it always points toward possible ectopic. These are the figures we have ascertained in going over these cases. The only thing I would say in addition is that we cannot emphasize too much the importance of teaching students the necessity of very careful history taking and careful history study."

DR. FREDERICK C. HOLDEN.—"What subject have we that presents so many and such a great variety of symptoms? I know of no other gynecological condition that gives us such a variety of ups and downs—with temperature and without temperature; with pain and without bleeding and so on, from one extreme to the other, and yet we are making diagnoses that were not made twenty-five years ago. Those of us who were internes twenty-five years ago seldom saw a case that was diagnosed as an ectopic pregnancy. Therefore, we must take heart and be optimistic, and I think the time is not far distant when we will be able to make more accurate diagnoses than we are making to-day. As Dr. Ward says, the good work which is being done is due to accurate, painstaking history-taking. The history cannot be gotten quickly: it must be gotten slowly. There must be a true interpretation of the history and the findings.

"At the Long Island College Hospital I feel that the students get the same drilling as they do in the West about history-taking. The Department of Gynecology feels that errors are more often made from incomplete history-taking than from ignorance. They are also taught any number of symptoms from the pathology. They are taught what causes the symptoms, what causes the different kinds of pain and the different kinds of symptoms, and we try to give them an eye picture of the condition in that way.

"At Greenpoint Hospital in a service of twenty-five beds we had only thirty cases in a period of three years.

"No one has yet given us an idea of how to make a diagnosis in all cases.

"I think one of the greatest errors in mistaking it for incomplete abortion. I think there are probably more cases curetted in one hospital and go to another hospital in a short time and are operated for ectopic than any other condition we have.

"We teach the student that in a case with any of the earmarks or any symptoms that may point to ectopic pregnancy, it is their duty to prove it is not an ectopic pregnancy, taking the same stand as with suspicious cancer cases, namely, that the patient is guilty until proven innocent. It must be shown that the case is not one of ectopic pregnancy.

"We are told that in 188 cases at the Woman's Hospital, in the last ten years, only eighty-six went on record as ectopics. I think you will find in that institution in the next ten years the proportion will be different. With our painstaking histories and our interpretation of the findings in these cases that Dr. Heaney has illuminated us with to-night, in the next ten years at the Woman's Hopsital, the history of the statistics, instead of being 188 with eighty-six diagnosed before operation, I think the figures will be very much reversed."

Dr. Florian Krug.—"The subject of ectopic gestation has always been one of great interest to me. There cannot be enough discussion on the subject of ectopic because once in a while it seems to be forgotten again and the very fact that there is such an urgent plea made to teach students and internes in hospitals how to make the diagnosis shows that there is a need for such teaching.

"I am not going back only twenty-five years, as Dr. Holden did, but I am going back a little further, thirty-five years, and the minutes of the transactions of this Society, as well as those of the American Gynecological Society, will show a whole lot of things that I have written and spoken about in these two societies, as in a great many others, in trying to get every one interested in the early diagnosis of this most treacherous accident common to women.

"I am very glad to have Dr. Holden say that a case is guilty until it is proven innocent.

"I see there are some of my former internes at Mount Sinai Hospital here to-night, Dr. Vineberg among them, and they will bear me out in the statement that we are 'sharks,' if I may use such slang, on ectopics, and I am glad to say that, to my knowledge, during my twelve years of active service in Mount Sinai Hospital, I know of but one case that got away from us unrecognized. We often sent out cards inviting the profession to our operations, and it was stated on the card, 'Laparotomy for suspected ectopic.' Sometimes it turned out that it was not an ectopic, but it was always some condition which warranted a laparotomy. I don't think we have as accurate statistics like those Dr. Ward has given us, but I am sure not a single one of us, when the abdomen was opened, was ever surprised where it was not suspected.

"It was my good fortune in January, 1906, between the hours of two and four in the afternoon, to operate on four successive cases of ectopic gestation, all previously diagnosed, all positively diagnosed and proved to be such on opening the abdomen, and I think that gives me the right to speak a little bit on this subject because I can claim that record unless some one can go me one better. I think that stands for a long time as the record of any one having done that number of laparotomies for previously diagnosed ectopic gestations inside of two hours.

"If I may be allowed, I would like to read an extract from one of my many papers on ectopic gestation, one read at the invitation of the American Medical Society in Philadelphia in 1908, in which I close with the following remark:

"Our highest aim in all branches of medicine and surgery should be prophylaxis. Since we can never hope to prevent ectopic conception, we must strive for the next best, viz., early diagnosis followed by early surgical cure of this most treacherous disease of woman. We must not be satisfied to do the right thing ourselves; no, gentlemen, our campaign must be an educational one including not only the medical student and the general practitioner, but also the masses.

"When the majority of women commence to realize the early prodromal symptoms of ectopic gestation and are familiar with the perfect results of early surgical interference, we can feel that we have fulfilled a great and glorious mission.

"I would like to say again to-night that, in educating women that they should not neglect themselves when they have atypical hemorrhages at the climacteric and simply attribute those symptoms to change of life, but they should go to some one and find out whether they haven't an incipient case of cancer which needs surgical interference, we must also teach them that when they have a peculiar history and peculiar pains on one side that then they should not wait to find out whether it is an incomplete abortion, but should go to a man, any physician, for advice in order that the proper thing may be done before it goes too far and creates a condition which might be a cataclysmic hemorrhage."

At this point the doctor stated that many of his cases come to him through reference of women he has operated on for ectopic gestation, and that he instructs his patients to warn their friends when they have the same symptoms that they may be having an ectopic gestation and not a miscarriage at all.

"Now, there is only one criticism in a most friendly way of Dr. Heaney's paper, and that is this: in your paper you spoke only of the symptoms of rupture in ectopic. I am quite sure it is only an omission, but still I would have liked it if you had also mentioned the symptoms of tubal abortion, which very often gives the same symptoms as a rupture of the tube. You can have a great deal of intraperitoneal hemorrhage from a tubal abortion without a rupture from the very fact that the ectopic ovum is expressed through the fimbriated end and causes at the same time a rupture and an arterial hemorrhage, and I am quite sure that the doctor, while he spoke only of rupture, also intended to include tubal abortion.

"Dr. Ward has given us very elaborate statistics in how many cases certain symptoms were present, but I would like to add one that I failed to hear about to-night, namely, the differential diagnosis between inflammatory conditions or torsion of a small ovarian cyst. Here we have extreme painfulness on touch by abdominal examination, or even when you palpate with the finger in the vagina without any pressure from the outside, and I would like to have that symptom included when you teach your students or your internes or your family physician. I find that one of the most prominent symptoms is extreme tenderness, which you will not find in any inflammatory condition or in any other condition which might be mistaken for ectopic. This is only a small but a valuable point.

Dr. J. O. Polak.—"I do not feel that the condition is quite as deplorable, as far as the diagnosis is concerned, as he seems to imply.

"In teaching this subject to students we have found one method that seems to be of some value, and I feel it is only fair to mention it. We have a very careful history taken of every case of suspected ectopic and we have every specimen carefully preserved, and we spend two hours of our ten weeks with each section in gynecology, in the museum, on the subject of ectopic. These men are permitted to have this history read and the specimen is shown and the pathological findings at the time of operation are recorded on this history. It gives them a better idea of what happens in these cases of tubal abortion, in cases of interstitial rupture, if they can associate the symptomatology, the physical signs and the operative findings with the picture that they see in the specimen, and in this way, it seems to me, they appreciate what the symptoms mean. For instance, in tubal abortion, when they see clots of blood coming out through the end of the tube and the ovum with the hemorrhage beneath it farther up in the tube and the clot coming out, they can appreciate why she had cramps referred to the fruit sac due to the peristaltic action of the tube. Where these cases show the extreme thinning, as they do, of the specimen and the porosity, of the overstretched wall, they can appreciate the soreness in the lower abdomen and that blood can get into the peritoneal cavity by the erosion as well as from the free end of the tube. We find in teaching in this way we have been able to have the men appreciate the importance of history-taking and what that history means.

"Again, the study of the relatively well-made decidua in the case of a normal pregnancy and comparing it with the decidua as you get it in sections and microscopical study of the decidua in the ectopic, gives them an idea of how in the normal pregnancy the uterus is protected from erosion. In showing them how it is possible for rupture to take place by the continued erosion, we find it makes a very valuable contribution to the method of teaching these cases.

Dr. A. M. Judd.—"In the clinics in which I work we, of course, consider that every supposed abortion is a possible ectopic until proven otherwise. We consider that the teaching of the diagnosis from the symptomatology of an ectopic, should not be dwelt upon in those self-evident cases of rupture and shock. Those cases are self-evident. We wish to teach the students to diagnose ectopic before rupture, or before a condition has resulted which has brought the patient to the condition of shock.

"Now, we have analyzed a great number of cases, including ninety cases which we had in one clinic, and, in passing, I wish to say that in those cases where we have the condition of extreme shock, I think there is but one type of case which you will mistake for it. That is a ruptured tuboövarian cyst. I made that mistake in two instances a year ago last winter. I opened both and found the abdomen full of pus. They had all the symptoms which are associated with a ruptured tubal pregnancy.

"In analyzing the cases we have come to this conclusion: that the history is 95 per cent. of the diagnosis of ectopic. I have even gone so far at the Kings County Hospital as to make a diagnosis and open cases without a vaginal examination to prove that the taking of my history was correct.

"We find that there are two types of ectopic pregnancy. I will just state them briefly. In the first type, considering that there is a previous normal menstrual history, the last menstrual period coming on at the regular time, instead of being a typical menstruation, will be atypical. The amount of blood lost, say, during the five days that she is supposed to menstruate, will not be as great: the bleeding will continue, they will 'spot,' and they will have little crampy pains on one side of the lower abdomen. That I consider a case of early tubal abortion. In the other type the history is of a postponed menstrual period, two or three weeks overdue; the period will apparently come on; the patients think it is their menstrual period, that they have simply gone over and it is coming on. Instead of bleeding the usual five, six or seven days, they will continue to bleed and they will have not the lancinating pain of the late cases with a large fetus developing in the tube. That is preparing for a later tubal abortion with a large amount of hemorrhage, or for a tubal rupture, the subsequent history depending upon whether it ruptures into the peritoneal cavity, whether there is a tubal abortion or a rupture between the two layers of the broad ligaments."

DR. H. D. FURNISS.—"I think if there has been one thing which has been taught by the experience of the men in the Army, it is the idea that the general mass of the doctors have gotten in regard to the acute abdomen. I think nearly all the men who have been in hospitals or been around base hospitals have gotten on to that. I believe ectopic will profit by that in the cases where there is a great deal of acute abdominal pain. I feel the early cases will require more teaching and more education of the public. The soldiers have profited as well. As a rule, the soldier stays in the hospital longer than a civilian because he must be kept in the hospital until he is fit to return and take up full duty, and in that time he acquires a certain amount of education that is going to be a benefit to the public at large later on.

"I am very glad to hear the emphasis which has been laid on the history. In the reading of Murphy's clinics I don't think anything was better emphasized than the fact that nearly every one of his diagnoses was made on an accurate interpretation of a proper history. If you read his clinics you will see where he made it a point to tell the interne to correct the history.

"Dr. Heaney in his paper has laid very little emphasis upon the physical findings. Most of his remarks have been on the history. I believe that in the great majority of ectopics you can make a diagnosis over the telephone. The greatest advantage in seeing the patient is to prove that the history given is an accurate one.

"In regard to hemorrhage. Ordinarily, after hemorrhage has occurred, you are not going to get evidences of it in your hemoglobin or cell count. You have lost a large volume of blood and it is some time before changes occur in the remaining portion. The doctor said the character of the blood is not changed and cited the case of a man with a complete transverse rupture of the spleen, with hemorrhage amounting to fully 1000 c.c., with a perfectly normal blood count and leukocytes of 15,000. Continuing, he went on as follows:

"In regard to the differential diagnosis between right tubal pregnancy and appendicitis, I think it is a better practice to make an incision through the abdomen in the first place. If you make a vaginal incision and it is not ectopic, the chances are that it is an appendix and you are going to open the abdomen. If it is an ectopic, you are going to remove it through the vagina or through the abdomen, so I think it is a much better practice in your right-sided cases to go ahead and make an abdominal section."

Dr. Frank R. Oastler.—"Over two years ago I went over 109 cases that I operated on over a period of a number of years and analyzed them as Dr. Ward did, and my percentages were nearly the same in those cases as in his. In other words, I would like to say with respect to Dr. Heaney's interesting paper, it seems to me as though Dr. Ward's percentage and Dr. Heaney's conclusions are almost alike, and that is if we are going to teach our students ectopic gestation and if we are going to teach the medical men who don't see as much ectopic as the gynecologist, it is absolutely necessary to revise the story as told in the text-books. The story as we read it in the text-books is not the story of ectopic as we understand it to-day. There is one thing in analyzing these 109 cases that I operated on myself that impressed itself upon me. I came to the conclusion that our text-books speak of ectopic gestation as being an acute disease. Now, ectopic gestation as we see it is not an acute disease. It is a subacute disease. It extends over a period of a number of days or weeks. Fulminating cases where there is acute hemorrhage and the patient is apparently about to die, are the exceptions and not the rule. Most cases that come into the hospital have been hanging around outside for two or three weeks before coming to the hospital for diagnosis and operation. If we can impress the student with the fact that the condition is not of an acute, fulminating nature, but is a subacute performance, such as subacute salpingitis is a more or less subacute condition, we will give him a better impression of the disease.

"I do not believe we can make a diagnosis of ectopic over the telephone. I do not agree with that statement because I do not think it can be done. The diagnosis is an extremely difficult thing. No one symptom can make the diagnosis. We must get all the symptoms in the history and judge from them. Dr. Ward reports he only got the diagnosis correct in 63 per cent. I had it correct in 70 per cent. and missed it in 30 per cent. of the cases, and I simply feel that my diagnosis was made from the whole range of symptoms, subjective and objective and not from two or three particular symptoms.

"Dr. Heaney has brought forth a very interesting fact. It is not the question of skipping a period, because, as Dr. Ward said a minute ago, a larger percentage of them don't give a history of amenorrhea and you will question them as carefully as you know how and you will not get a history of a skipped period, but you will get a history of some irregularity around the menstrual time. As Dr. Heaney said that is the most important thing—the irregularity of menstruation when the patient has been previously regular.

"Another thing which Dr. Polak mentioned are the three classes of cases that have ectopic—those with congenital deformities, those with some suppurative inflammation or some disturbance of that sort, which causes some disease in the tube, and the passing class, so to speak. Unfortunately, in the cases that I had in my own particular care there were a great many ectopics in which I could not elicit any definite cause as to why they should have an ectopic.

Some of them had previous histories of pelvic inflammations; some were congenital, but there were a great many that just happened for no apparent reason whatsoever, and if you sectioned the tubes you got no particular information to help you. We sectioned a great many tubes. In the great majority we found nothing to account for it. Dr. Polak called them the passing cases, but in my cases they were in the majority rather than in the minority."

DR. W. P. HEALY.—"In referring to the answers of students to questions on examination-papers about ectopic gestation, it has been to me quite illuminating to notice how perfectly they can answer theoretically and what a splendid paper they can put in on the differential diagnosis of ectopic from any other abdominal lesion, acute or subacute in type, and yet when you have the same students in the operating room or in the hospital as your assistants they will constantly fall into the error of making a diagnosis of incomplete abortion in the presence of ectopic gestation. Almost every week, without exception, we will have at least one case in which we will suspect ectopic gestation, and yet we will be unable to make a positive diagnosis as to the exact pathological condition present and, at least in my own cases, it is not unusual for me to even feel that it is not wise or desirable that I should advise an exploratory celiotomy, and I want to endorse personally very strongly Dr. Heaney's recommendation of a posterior colpotomy. I think it is very unusual for gynecological surgeons to omit the opportunity offered to them to do a posterior colpotomy, but we don't have to teach alone the medical student or the interne. I had the experience two or three days ago of attending a surgical clinic of one of the best known general surgeons in this country. He read to a very large clinic the history of a woman who was about to be brought in for operation, and he read what he called a perfectly typical history of cholelithiasis with intermittent attacks of pain, and now at the present time a recent attack. He read from the menstrual history and all that he had to say about the menstrual history was 'Menstruation irregular,' and then he added, 'Whatever that means.' He then went on to say, 'However, in examining this patient, gentlemen, I find she has a mass in one side of the pelvis, rather a large mass, probably a fibroid or a cyst, but, of course, the woman can have a fibroid or a cyst and have gall-stones as well. There is no question in this case as to the diagnosis: it is that of cholelithiasis, and we are going to operate on her for that condition.' She was brought in. In this particular clinic they don't put the iodin on until the patient is in the operating room, and it was very evident that she was decidedly anemic. He made a gall-bladder incision and found the abdomen filled with free blood and didn't wait to do anything further above, but made an incision below and removed an ectopic gestation from the left side with a fetus. He then said, 'I asked my house surgeon if this woman could be pregnant or have an ectopic because she had hyperesthesia of the abdomen,' and yet he didn't go any further in trying to clear up the history. She did have one gall-stone in the gall-bladder. When he finished with the ectopic, however, he closed the upper incision leaving the gall-bladder alone."

Dr. Dougal Bissell.—"I would like to refer to one point which the doctor brought out in his paper, and that was the size of the uterus, with which I agree. Sometimes it is large and sometimes it is small, and it may make the picture somewhat confusing. There is a class of cases which I think he did not refer to and which I think needs reference, and that is the case where there is a pregnancy in the tube and uterus at the same time. It has been my fortune to meet with such a case. A diagnosis of ectopic of the right side was made. The uterus was larger than normal, but I simply considered it an extreme occurrence. In that case we found that the uterus was also pregnant along with the tube. The tube was removed and she went on to full term and delivered."

Dr. H. N. Vineberg.—"As I listened to the various remarks made here to-night, some things occurred to me as to the number of mistakes which we have all made in the diagnosis of ectopic pregnancy. I will relate one recently that occurred to myself and a fellow-member of this Society whose opinion I value very strongly. A young woman married a short time with a previous history of infection, with pain in the left side of the abdomen, whose menstruation at no time was very regular. She was perhaps unwell once in five or six weeks or four or five weeks. She had been no more irregular at that time than at any other previous time, and she had a small mass in the left side of the abdomen. The gentleman who saw her with me agreed it was a case which called for at least a posterior vaginal exploratory incision, which was done. There was no free blood in the peritoneal cavity. I could pass my finger directly in and palpate the tube on the left side and found it slightly enlarged and adherent and naturally I came to the conclusion that it was a mild salpingitis from gonorrheal infection. She made a good recovery, was sent home from the sanitarium where she was, but about two weeks later she was again taken ill with severe pain in the left side, and I did not see her until a few days later when there was a good sized mass in the left fornix. I considered it a case of ectopic gestation notwithstanding the result of the vaginal exploratory incision. The same gentleman was again called in consultation and I had the greatest difficulty in convincing him that we were dealing with an ectopic. On opening the abdomen the mass was found to be very small, a hematocele the size of a closed fist; forming its upper boundary was the tube which was slightly thickened at the isthmus portion and containing a small blood clot.

"Another instance was the case of a young woman who first; consulted me when she was about two weeks overdue. I found the uterus slightly enlarged and made a diagnosis of pregnancy. A few weeks later she consulted me for pain in the left side of the abdomen. I examined her again very carefully and found a distinct mass in the left side of the uterus and I made a diagnosis of probable interstitial ectopic. She was also seen by a member of this Society in whose opinion I had strong confidence. He agreed with me in the diagnosis.

I opened the abdomen and simply found a uterus bicornis with pregnancy in the left cornua. She went to term and was delivered by me without any difficulty.

"I think that ectopic pregnancy is one of the most difficult things to diagnose under certain conditions and I must agree with some of the speakers to-night that we should not lay too much stress on the local findings, as illustrated in this case which I just reported where competent men were unable under anesthesia to find anything abnormal in the tube and yet it contained an ovum. I have known of cases where without anesthesia I was able to feel something that made me suspect the presence of an ectopic, yet when the patient was under an anesthetic I felt practically nothing, and the reason for that is very readily understood if you have a tube which is perhaps not much larger than the little finger, so it is pretty hard to make a distinction and say that such a tube is the seat of an ectopic pregnancy."

Dr. N. Sproat Heaney.—"In Chicago, we all expect to be handled very gently in the east. We, however, are not always so inclined. We are marines and we 'treat em rough.' I was especially prepared for polite discussions because before I left Chicago, I looked up what the New York men had to say on ectopic pregnancy, and in Dr. Cragin's text-book I ran across this statement: 'If a married woman, living with her husband, suspects she is pregnant and has pain in her pelvis, she is very likely to have an ectopic pregnancy.' This is not the way we teach. Our way is like this: If a woman young or old, maiden or married, or toothless old woman has these symptoms, she has probably got ectopic pregnancy. That is another difference between the east and the west. The principal thing, however, that I wanted to emphasize, is the value of the history. I think that is the all-important thing in the early diagnosis of ectopic pregnancy."

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

Meeting of April 3, 1919.

The President, DR. F. HURST MAIER, *in the Chair.*

DR. STEPHEN E. TRACY presented an

UNUSUAL SPECIMEN OF FIBROID OF THE UTERUS AND ALSO PART OF A NEEDLE WHICH HAD BEEN IN THE PERINEUM FOR TWELVE YEARS.

DR. BARTON COOKE HIRST spoke as follows on

THE NECESSITY FOR COÖPERATIVE WORK IN THE CARE OF THE PREGNANT POOR OF A LARGE CITY.

THE mortality of the nine months of intrauterine existence is the greatest in any similar period of human life, except perhaps in extreme old age. There are many causes for this but chief among them is unquestionably the premature interruption of pregnancy before the viability of the infant. Statistics show that at least one out of five pregnancies is prematurely ended. This, therefore, accounts for a death rate of 20 per cent. There are at least 5 per cent. of children lost in labor; in addition a small percentage are accounted for by the diseases complicating pregnancy, chief among which is toxemia and its ultimate expression, eclampsia. It may be fairly stated, therefore, that the mortality in the nine months from conception to maturity of the fetus is about 30 per cent., exceeding that of any other period of the same length in human life.

Some reduction in this mortality can be effected by prenatal care, a new name for an old practice. Pregnant women have always received the care of competent physicians, under whose charge they are and have always been given the proper advice as to the precautions necessary to preserve their health, and to escape the commonest accident of pregnancy, its premature termination.

There is nothing new in this practice but of late years there has been an attempt to secure for all classes of society the advantage of those in the better walks of life, who have been under the charge of physicians competent and willing to give them the proper care.

How to secure this result in our own community is the problem before us this evening. Philadelphia lags behind other large cities of America in this respect. The time has unquestionable arrived when we should advance our methods to the standards of other cities.

There are three classes of society which need looking after and cannot be trusted to secure for themselves proper attention. One is the very poor who receive medical attention without any remuneration. The next higher are those in charge of midwives; finally there is a large class employing the mediocre physician for a small fee and receiving attention commensurate in the physician's opinion with the fee they pay.

Each of these classes must be reached in a different manner. The very poor are cared for by hospitals and free dispensaries. These institutions should, and I think, generally do, give the advice to their patients to report regularly for blood pressure estimates, urinary examination and advice as to their mode of life, exercise, etc., but it is a common experience to find the patients indifferent to this injunction. They fail to report as they are advised to do and only reappear in the hospital or dispensary service when they actually fall in labor, meanwhile being left entirely to their own devices and very often neglecting themselves or committing imprudences which are disastrous to their offspring. These patients can only be reached by a system of house visits by social workers or trained nurses, but this plan involves considerable expense, and it is difficult to cover all sections of a large city equally well. In the patients under the charge of midwives, good results could only be secured by extending the supervision of the midwives' work, excellently done in this city, to their care of the pregnant patient before they fall in labor. The most difficult class to deal with is that employing physicians for a low fee. It is not always practicable to supervise such medical work and it is a delicate matter to intrude upon the physician's patient. How to obviate this difficulty is one of the problems which I think should be discussed to-night.

One practicable plan would be for the Board of Health to keep a watch on the results of practice and judge the practice of a physician by the death reports returned. For example if it was found that a certain physician reported an unusual number of stillbirths, his work might possibly be supervised but this would leave out of account the most serious cause of fetal mortality, miscarriages, which are not reported and for which it would be very difficult to trace the responsibility. A question I would like to address to the Director of Public Health is this: Ought not miscarriages to be reported? The habitual criminal abortionist might be detected in this way and a reputable physician who had too many miscarriages among his patients might have his practice tactfully inquired into to determine whether he supervised the course of pregnancy in women under his care as he ought to do. Leaving these generalities in regard to this question let us come to the conditions prevailing in Philadelphia.

The Southeastern section of the city is overprovided with dispensary services. There is the Southeastern, the Jefferson, the

Women's, the Philadelphia dispensary. There is ample provision, indeed too much, for supplying medical attendance in actual labor cases while the rest of the city is entirely neglected.

What of the care of pregnant women in this over-supplied district? Judging from the Southeastern Dispensary, the largest of them all, I should say the attention is imperfect. We advise our patients to report regularly for advice and examinations, but many do not appear. We are allowed only eight hundred dollars a year from the University of Pennsylvania and cannot possibly maintain nurses and social workers to visit the patients in their homes. The only organization we can appeal to is the Visiting Nurse Society. This institution offered to do the work but demanded four thousand, eight hundred dollars a year to supply us with the four nurses necessary to do it. The city nurses might be utilized in this way and I think ought to be, but I failed to secure their coöperation. The rest of the city north, west and southwest and northeast has no provision for this work at all as far as I know.

Now how should the poor of all parts of a great city like this be afforded medical advice and examinations to lessen the fetal and maternal mortality in pregnancy due to inattention, ignorance and neglect? The only solution of the problem I can see is to canvas every hospital and dispensary in the city to determine whether these institutions are doing their duty to the poor in this respect; to inquire why not, if they are neglecting it, and to require their coöperation in a general scheme to afford the poor women of this community the advantages enjoyed by their richer sisters. There is no district in the city now unprovided with hospitals.

Here is a field for Dr. Baldy. His board demands that every hospital shall have accommodations for maternity services; let him insist that a part of this work be a supervision of the patient before she enters the hospital and let us request his aid to procure from the State, sufficient financial assistance to establish in connection with existing institutions, a visiting nurse or social service corps for out-patient work. If the city in its turn requires from existing organizations designed to furnish nurses for the poor; including its own corps of trained nurses, a coöperation with dispensaries and hospitals unable to maintain nurses and social service workers for outdoor work, much may be accomplished in removing the stigma under which we now rest, of paying less attention to this need than other cities. Indeed with the multiplicity of hospitals in every part of Philadelphia, we could by effective coöperative work, set a model for the rest of the country.

Dr. Edward P. Davis read a paper on

THE NOURISHMENT OF THE PREGNANT WOMAN.

(For original article see page 23.)

DISCUSSION.

Dr. Wilmer Krusen, Director of Public Health.—My discussion will be directed more particularly to the subject which has been brought before us by Dr. Hirst on this occasion. Statistics indicate the necessity for more work and better work in regard to prenatal care and care during delivery. The death rate from puerperal sepsis in this city and country is not decreasing. The death of the mother means the breaking up of the home. It is a matter, therefore, not only of greatest interest to the medical profession, but should be of interest to the thoughtful and the altruistic citizen. I shall quote first from the maternal statistics of this city during the last three or four years: In 1914, 313 women died during the puerperium. In 1915 there were 282 deaths; in 1916, 289; in 1917, 259, and in 1918 there were 255. While there has been a gradual improvement in the maternal mortality from 1914 to 1918, the point that makes us blush for Philadelphia obstetrics is that while obstetrics may be well taught in Philadelphia medical schools it is questionable whether obstetrics is well practised by the Philadelphia practitioner. We have many reports of physicians attending women in confinement, who charge from $15 to $25, receiving their fee at the time of delivery and not seeing the case again. This indicates what may occur from lack of care during the puerperium. We may not like to have these statistics read to us, but these are figures that do not lie. In 1916 Philadelphia had the largest maternal mortality of any of the large cities in the United States, there being one death in every 143 women delivered during that year. In New York there was one death in 217 deliveries; in Newark, one in 454; in Boston, one in 153. However, our statistics have improved for 1918, when we had only one maternal death for each 166 deliveries. During the last year we had practically 42,886 births in the city of Philadelphia. Of these babies 5366 died during the first year. We would have had better statistics had it not been for the influenza. During the first two weeks of the epidemic we thought that children under one year would not be seriously affected, but from the 20th of September to the 8th of November we had 117 babies under one year die during the epidemic and our hopes for a lowered mortality were destroyed. Eighteen hundred and thirteen children under five years of age died during the epidemic.

What do these statistics mean? That we have poor obstetrics in Philadelphia? Does it not mean that we are not giving the care to the poorer class of women that we ought to give?

Dr. Hirst has spoken of the work of the Visiting Nurse Society and the work of this Society has been admirable. I would like to call attention to the fact that the nurses under the Division of Child Hygiene have had 3000 children under their care. Three years ago we had twenty-eight nurses at work. Through Councils this number was increased to sixty. We ought to have 200 city nurses. We select the ward for the work of the city nurse by taking the infant mortality statistics by wards. If in a ward this mortality is 100 per thousand we would probably pass that ward by, but when we find a ward in which 140 or 150 children out of every thousand born die during the first year of life we place our city nurse there. We began a few years ago with one health center; we have now eight of these centres located in the congested wards, and the selection for these centers is based upon the same conditions as the selection of the ward for the work of the city nurse. We ought to have a health center in every ward of Philadelphia.

The health officers of our city need the influence and coöperation of this body to impress upon the Finance Committee of Councils the imperative need of money for this purpose. We have been able to obtain a certain amount of appropriation for this work but more money is greatly needed.

Reference has been made to the number of babies delivered in Philadelphia during the past year by midwives. It is not a credit to the medical profession that the morbidity and mortality percentage was less among these than in deliveries by the practitioner of medicine. The city nurses do what they can in prenatal work, but they do not do the type of nursing given by the visiting nurse. The work of the Division of Child Hygiene in Philadelphia should be enlarged. With an extensive Social Service organization in all the general hospitals of the city it seems to me a comprehensive plan for the care of the child could be established. More maternity hospitals are greatly needed. During the last year the housing problem has been one of the most perplexing presented to the people of Philadelphia. Because of the increased population and the cessation of building operations the need for the smaller renting houses was very great. Members of this Society having patients in boarding and apartment houses during the last year know how crowded the maternity departments of our general hospitals have been. We need at the Philadelphia General Hospital a separate maternity building where we may have a joint obstetrical and gynecological staff to do the work. The question of maternity insurance which is being interwoven with the economic problem is an important one calling for our consideration.

Dr. Lida Stewart-Cogill.—We all know that if both maternal and infant mortality as well as morbidity is to be reduced we must have a greater amount of prenatal work done. It is not only in Philadelphia that there is a high mortality, but the United States stands third highest for its infant mortality rate in a list of sixteen civilized countries. This is a reflection on the kind of obstetrical work done, for statistics show the majority of infant deaths occurring before the first month of life are due to congenital causes, 50 per cent. of which might have been prevented by prenatal care of mothers.

Dr. Hirst spoke of Philadelphia having plenty of dispensaries doing prenatal work in the southern part of the city but not many in other parts. At the Woman's Hospital there is a *daily* prenatal clinic and at the West Philadelphia Hospital for Women, a *weekly* prenatal clinic is held, both are well attended. The women are instructed to report early in pregnancy for registration and to return every two weeks for observation. Pelvic measurements, routine Wassermann, and routine examinations of the cervical and vaginal secretions are made in each case and treatment immediately instituted in those showing presence of venereal disease; the blood pressure is taken and urinalysis is made upon each visit to the clinic and if there are any "danger symptoms" present patients are brought into the house and cared for in the maternity building. A printed list of instructions as to diet, clothing, danger symptoms, etc. is given each patient also stated talks on meaning and need of prenatal care, thus each year from 1200 to 1500 mothers are instructed in and given prenatal care in these two sections of the city.

One Association especially interested in increasing the amount of prenatal work done in this city is the Babies Welfare Association of Philadelphia, which has been instrumental in having a number of prenatal clinics established in several institutions.

Speaking of the care the pregnant woman should receive, I feel that we should also have a department connected with each maternity where the poor women who need rest and good food could go and be taken care of properly until delivery.

De Lee's "Year Book" for the year 1919 speaks of the need of such department and I agree thoroughly with him.

The Woman's Hospital and the West Philadelphia Hospital for Women also maintain a postnatal clinic, which is under the charge of the Obstetricians, for further observation of the puerperal mother and infant, up to two months of age.

As stated above 50 per cent. of infants who die before first month of life might have been saved by prenatal care. Of the other 50 per cent., a large portion might have been saved by proper feeding, therefore we feel if we have them under our care for the first eight weeks and see that they are properly fed—breast-fed if possible—and that they gain regularly we shall be more certain of their life for the first year, so the mothers are instructed upon leaving the maternity to come back to the postnatal clinic with the baby every two weeks until baby is eight weeks old, after which time baby is referred to the babies-health clinic. At this time examination of the mother is also made to ascertain the position of the uterus, condition of genital tract and to determine whether lacerations or other conditions needing attention are present.

If at the end of eight weeks, or sooner, patients are not in proper condition they are referred to the gynecological department for treatment. In this way we have the mother under supervision from the earliest months of pregnancy up to the end of the puerperium or eight weeks after delivery, thus avoiding or overcoming prenatal complications and such postnatal conditions which tend to make chronic invalidism in so many women of child-bearing age. It is needless to state that the Social Service Nurse is invaluable in follow-up work and in seeing that patients having venereal disease are kept under treatment, as the untreated syphilitic prospective mothers play a large factor in the death rate of the infant.

Dr. E. A. Schumann.—It seems to me that the hospitals to which Dr. Hirst particularly referred are not at fault. I believe that almost every hospital in Philadelphia which has a maternity clinic is doing good prenatal work. The women are being properly instructed and the deaths which occur from neglect do not occur in that class of patients who apply for hospital treatment. The mortality I believe occurs in the class which employs the poorly trained doctor who does not give proper attention to the patient. I cannot see how a multiplicity of hospitals and dispensaries for prenatal care and obstetric oversight will change the conditions until there is a radical change in the point of view of the women and until more of the poor seek hospital care. It has seemed to me that inasmuch as our obstetricians are not exactly in accord regarding the value of prenatal care it might be a good plan to have an informal association of the obstetricians in charge of maternity clinics to formulate a rather definite plan of pre- and postnatal care. I do not think the plan of zoning the city has been actually done in New York. It has been tried but the plan did not succeed in having the women attend. How to bring the women to seek prenatal care is a difficult problem in which I do not think the obstetricians are solely at fault.

Dr. Richard C. Norris.—I have watched with much interest the Social Service Department of two hospitals with which I am closely associated and have come to the conclusion that the value of social service depends wholly upon the character of the people who actually do the work. There must be the spirit of self-sacrifice and of devotion to make the work successful. Paid employes who wait for the patients to come to them do not contribute to the practical accomplishment of results. It is necessary to go after these people. They won't all come to the clinics. At the Preston Retreat we have a first class Social Service Department. We have been told that it is one of the best in the city. Its value depends solely upon the three or four women who do the work; not upon the women who support and control it; not upon my guidance, but upon the work of the women who do the actual work and who are imbued with the Social Service spirit. We talk much about Social Service and what it is accomplishing. Prenatal clinics cannot change the laws of inheritance, but it can help us much in our maternity work. It leads to better obstetrics, teaches the hygiene of pregnancy and leads to the early recognition of the toxemia of pregnancy. Many of the women will not come regularly to the hospitals to be properly instructed and supervised. We must, therefore, go to their homes. At the Preston Retreat infant mortality from the accidents of pregnancy and labor has been reduced one-half by actual figures since we have had the Social Service in operation for three or four years. This is due to the fact that the workers go after the women, take blood pressures and see to it that urine examinations are made and other instructions are followed. Sometimes they supply food or even coal if need be. The work is a charity and must be administered in a charitable spirit. At the Preston Retreat we teach the convalescing mothers how to feed and bathe the baby, yet we know that when the women go home the babies may be fed irregularly and sometimes not be washed for three or four days. Our Social Service worker goes into that home and follows up the work. This represents a tremendous amount of self-sacrifice and perseverance on the part of the individual who is doing the work. Opportunities are offered for the detection and treatment of syphilis in early pregnancy, all of which tends toward better obstetrics. To cover the entire city as we have covered a small area in our Social Service work is a tremendous undertaking. Prenatal care does more for the mother than for the child but will bring about a better infant mortality in maternity work and if followed up will reduce the mortality and morbidity of early childhood.

Dr. Davis' paper is a very thorough discussion of the hygiene of pregnancy. We speak of avoiding red meats. What is the difference in the metabolic activities of the body between red and white meat? Dr. Tyson used to say it did not make any difference, that meat red or white was proteid, but that we all ate a larger proportion of red meat and for that reason only restricted red meat. As I have studied private patients I have come to the conclusion that the most important thing you can say to a pregnant woman as to diet is not to *over-eat.* Over-eating produces more harm than selective eating does good. How do we know that it is one kind of protein that the woman cannot metabolize while she can digest and assimulate another? The important factor is the careful watching of the patient and when she begins to show a break in her body chemistry, then you should clamp on the diet lid and the more nearly this approximates a low protein and carbohydrate diet the better will it be for the woman. There are some pregnant women, pale, anemic who need meat as long as their body chemistry balance is maintained. The statement that the unborn child is a parasite is not as fully accepted as formerly. The size of the infant, its weight, and development constitute a process in pregnancy which we have not yet solved. We do not know why some babies are so much larger than others. It is an inheritance. To sum up briefly, the food of the pregnant woman should be the kind of food in moderation that you would give any one undertaking a task that will tax their metabolism and their reserve nerve energy. You would not allow a football player to over-eat. The problem for the pregnant woman is to lighten the metabolic load for that particular individual, fearing some break may come. Until the break is threatened a mixed meat and carbohydrate diet may be given, but always with the caution not to over-eat.

Dr. William R. Nicholson.—I think Dr. Schumann has struck the proper note in expressing his belief that the hospitals are not especially to blame in this matter. At the Presbyterian Hospital we have a very active prenatal clinic twice a week. New cases come on one day, and the old cases on another. The women coming to the clinic get good instruction, but there are some whom we cannot reach in this way. That, however, is not the fault of the Presbyterian Hospital. We reported 7100 cases this year attended by midwives. Dr. Krusen's plan put into operation would show a remarkable result in saving infant lives. If the State were running a stock farm it would take great care to have the young produced on that farm receive the best possible attention. All this waste of baby life is appalling. We have, among the midwives' cases, as Dr. Krusen has said, probably a better mortality and morbidity so far as the women are concerned than in the hands of all classes of doctors, but the mortality statistics among babies after the first two weeks are terrific. Dr. Krusen's idea of a health center in every ward as a missionary enterprise for the training of these people is a good one. The project must be a matter of education. These people now will not come to the clinics. They insist on having the same methods of delivery which their mothers and their grandmothers had, and will not have a man physician unless there is some severe complication. The increase in the work of our midwives during the late epidemic of influenza has been tremendous because there were not enough doctors to go round. When we started our work there was no dependable record at the City Hall of midwives. At the present time, except for a few practising under cover and aided and abetted by members of the medical profession, we can put our finger upon each of our midwives.

Dr. Schumann also spoke of the poor doctor in his relation to midwives. "If we had power to say to the midwives that when they get into difficulty they must call in a man of recognized ability we could show a vast difference in our results. Such men would not have to be specialists with hospital facilities. Many cases developing sepsis have been handled by doctors. Diagnoses coming to me are readily recognized as belonging to certain men. For instance, we have had diagnoses of "impacted head" for the last four years coming from an individual doctor. If the Bureau of Medical Education had the power it would do away with the midwife to-morrow. The Bureau, however, is overseeing affairs in the whole State and there are districts in which midwives are absolutely essential. What would happen even in Philadelphia if our 8000 cases were to be deprived of midwives? We cannot do anything in the purely postnatal care as we are discussing it to-night. For instance, a woman in the southern part of the city recently gave birth to four children at one delivery. I am certain that the three of these which died could have been saved with proper care. We have not lost a gonorrheal eye for three years and we know this because we have traced every single case. If we could get the money to put into effect the project outlined by Dr. Krusen and to send out such workers as mentioned by Dr. Norris astonishing results in a lowered infant mortality would be shown.

Dr. J. O. Arnold.—Speaking for the Samaritan Hospital I can say that while we have been greatly handicapped during the war period by a shortage of doctors and dispensary help, yet we have been able to do some good work, both prenatal and postnatal. In addition to our regular Social Service worker the Training School provides a senior nurse who visits all patients registered in the Maternity Dispensary, bringing back reports of their home conditions and generally aiding in their prenatal care. She also follows up the ward patients when they leave the Hospital, giving especial attention to the welfare of the babies—seeing that they are properly nursed or fed, and when necessary, bringing both mothers and babies back to the Dispensary. This is made a part of the training course of the senior nurses, who are assigned in regular turn for this duty. It seems to me that every institution with a training school can, in this way greatly help in prenatal and postnatal maternity work. When more of our younger men return from army service, we hope to be better equipped for a larger and more efficient service along this line.

Dr. William E. Parke.—I believe prenatal work is more valuable as an educational project or enterprise than in any other direction. Not only the doctors connected with these dispensaries are educated, but the women themselves taught to seek the aid the dispensaries afford. During the discussion I could not recall a single instance in the dispensary with which I am connected in which the patient has gone bad after being under observation. For example, we see the beginning of toxemia and treat it. The cases that have done badly have been those brought to us in the ambulance and which have had no advance treatment. In these which are emergency cases I do not see how the clinic can be of service except in the educational sense of spreading the opinion that these people ought to be looked after. They must, however, apply for the help, for we have no way of hunting them up.

Dr. Stricker Coles.—We have a Social Service organization at the Philadelphia Lying-In Hospital but we need more workers. Men who run hospitals and maternities of this city are equal to doing this work if they could secure the proper help with which to do it. Such work should be so organized that it would not overlap, this I think is our great fault as all of us try to take care of cases scattered all over the city.

Dr. Hirst, closing.—The thought prominently in my mind during the discussion is the fact that 30 per cent. of human life is lost before the baby is born and 12 per cent. before the child is a year old, making a death rate of 42 per cent. in the early months of life. The largest factor in this excessive mortality is that of abortions, accounting for 25 per cent. Three classes contribute to this percentage: (1) The very poor; (2) those employing mediocre physicians; (3) those who consult criminal abortionists. While I do not know whether it would be practicable to have miscarriages reported, personally I can see no reason why this should not be demanded by the Health Board and it seems to me that such requirement would lead to better results. The habitual abortionist would not send in his reports unless the law required it and the receipt of reports from a man known to have such cases would lead to his apprehension. If the general practitioner sent in a record of a large number of abortions he might be interviewed and his practice tactfully inquired into. If one could get rid of the high mortality caused by abortions there would be an immense saving in human life. Failure to devise means to lower this mortality rate presents a spectacle of medical inefficiency which is rather humiliating.

Dr. Edward P. Davis, closing.—This question grows large as one thinks about it, especially in its relation to sociology. So far as prenatal work is concerned, in my opinion its value depends upon the character of the persons who do it. In one of the dispensaries with which I am connected we had a nurse who until she went into war service was a perfect center of salvation in that particular part of the city by her personal character. She was the friend of all the women and every man respected her. Then the educational value of this work among students has been demonstrated in a striking way. We have had students who would buy food for the poor and go to the homes to take care of these patients. In my opinion the value of Social Service depends upon the good sense of the Social Service worker. The work of the "scab" doctor might be counteracted by having hospital service for the poor at about the price which would be his fee. I don't believe, however, that any corporation would finance such a building; the cost of each individual patient is too great at the present time to have this done. I think that in the wards of any general hospital $2 a day does not cover the cost. If the staff of the Philadelphia General Hospital would establish a maternity building where patients paying $10 per week would receive adequate care the question of the "scab" doctor would be met. It is not the patients who come to the hospital with whom we have any trouble, but the people who want to be a little better than their sisters. They are the ones who get into the most trouble and give the most trouble.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, April 22, 1919.

DR. SOLOMON WIENER *in the Chair.*

DR. DAVID N. BARROWS reported a case of

SOLITARY ULCER OF BLADDER.

This case is of interest in that it shows a large ulcerated patch in the bladder, on an indurated base, resembling in many ways, in symptom complex and subsequent history, the so-called solitary or elusive though characteristically minute ulcer described by Hunner.

His reports of forty-two cases showing a large indurated area, with one or more small ulcerations, giving especially pain and urinary disturbances, point as does this case, to the theory that the only way to give these unfortunates any relief, is to excise completely the indurated portion of the bladder wall. He specifically recommends this procedure and describes, besides his successful cases, some where it could either be incompletely done or not at all, resulting in the persistence of the symptoms in spite of all other forms of treatment. Unfortunately in the case I am describing, there was a narrow margin of induration which was too near the right ureter to be removed, and which after about a year and a half, has begun to cause a slight return of trouble.

Mrs. C. B., admitted Oct. 25, 1917, white, born in U. S., aged twenty-four, married one and one-half years, one child four months old. Normal labor, no perineal repair. Heathy family with no history of malignant disease or tuberculosis. No personal history of tonsillar or rheumatic attacks, no serious illnesses in childhood.

Her menses began at thirteen, recurring irregularly every four to eight weeks, of four days' duration, and she had had none since before pregnancy. Her appendix removed nine years before without sequelæ.

Chief Complaint.—Pain in region of bladder for two years, with painful burning urination; occasional hematuria since fetation, and gradually increasing nocturnal frequency, occurring 4 to 5 times at time of admission.

She had been under treatment for a year at various places, and had finally resorted to a cystoscopy for an explanation of her trouble. Was referred to hospital with diagnosis of ulcer, possibly malignant or else due to extracystic inflammation. Wide excision advised.

Physical examination showed a well-nourished woman, of healthy appearance, who revealed no abnormalities beyond a slightly relaxed perineum, with small laceration of cervix uteri. Adnexæ negative and uterus normal in size and position.

A cystoscopy on Oct. 29, 1917, showed the trigone slightly edematous. Some free mucus in medium. Ureter orifices normal in appearance. Encrusted, apparently elevated irregular ulceration, size of silver quarter to outer side and posterior to right ureter orifice at the junction of right lateral wall and floor, and similar area of about same size posterior to it. Surrounding these a scarred area, whitened, blanched, containing few vessels, with shallow ridges radiating toward growth.

Urine showed faint trace albumin, very few pus and red cells with moderate amount of floating mucus.

Operation the following week by Dr. W. E. Studdiford; suprapubic incision, bladder freed from peritoneum from above downward on to right side; opened at fundus and large flat ulceration revealed with surrounding scarred indurated area. This area excised widely with good margin except near right ureter, where the incision ran close to the ulcer margin. Bladder closed with submucous and layer sutures and self-retaining catheter inserted. This catheter removed after ten days and patient catheterized q.6h. for two days after, when she was able to void, though with considerable frequency.

Pathological examination showed no signs of malignancy, but marked congestion, with hemorrhagic areas (traumatic ?) and distinct infiltration with small round cells and polynuclears of all coats of bladder wall. Diagnosis, hemorrhagic ulcer of bladder, non-malignant.

Convalescence uneventful; bladder clearing fairly rapidly with decrease in frequency, although on forty-first day, bladder could not be washed clear enough for satisfactory cystoscopy with six irrigations.

Discharged on the forty-seventh day in good health. Pain gone. Frequency better; twice at night.

Cystoscoped two months later and bladder clear except for redness along scar. Fourteen months later she appeared for cystoscopy complaining of mild pain, and having to get up once at night. Examination showed an edematous, cobblestone-like area along site of scar. Section of this was removed and showed merely edema of mucosa.

Hunner gives as the chief diagnostic symptoms of elusive ulcer: Pain, chiefly, with frequency, day and night, strangury, burning and smarting in varying degree. A sensitive, infiltrated granular urethra. Clear urine with floating mucus cloud, and a few red blood cells on careful sedimentation. With long duration of symptoms, not responding to any form of treatment. Cystoscopic findings on careful examination, the whitened scar-like area with a small number of minute ulcers. He saw hematuria in but one case.

This case differs naturally in the urine picture and the hematuria, depending undoubtedly on the size of the ulceration.

In its postoperative course it unfortunately followed the course he has laid out very closely so far, with total excision the evident treatment of election, and confirms our original opinion that it is closely allied to his group of cases.

His alternative treatment for cases which cannot be operated on, is now under way. Irrigations with 1 to 10,000 bichloride and instillations of 1 to 500 silver nitrate, with the application of 10 per cent. silver and the actual cautery still to be applied. The patient has gained tremendously in weight since the operation, which will make the last two more difficult.

Investigation of teeth and tonsils failed to back up the theory of a focal infection here, but rather a characteristically insidious onset with no evidences of any acute infection of the bladder at any time.

DISCUSSION.

Dr. William P. Healy.—This is a very interesting case. I would like to know the capacity of the bladder in Dr. Barrow's case before the operation and what the capacity was when he last examined the patient, because he knows and we all know that we can remove a great portion of the bladder wall and in the course of a few months the remaining portion of the bladder will have dilated to such an extent that it will retain a number of ounces of urine. Dr. Barrows has examined his patient very carefully and there is little to add to what he has said except to emphasize that the title of Dr. Barrows' paper is quite appropriate since it distinguishes the condition in which there is a solitary ulcer as in the case he reports from the condition in the case described by Hunner where there is an edematous area suggestive of ulcers on the mucosa.

I have had under observation for a number of years a case which corresponds very closely to that of Dr. Barrows. When the case came to operation I cauterized a large ulcer and did a suprapubic drainage after the patient had had symptoms for three years. The patient was much improved for two years following the operation though she was at no time perfectly normal. At the end of two years the symptoms returned and thinking her case belonged to the elusive type of Dr. Hunner, I communicated with him and sent the patient to Baltimore. Dr. Hunner thought it was one of the class of cases he had described as elusive ulcer, but when he opened the bladder he found that it was not. He removed two-thirds of the bladder. This occurred several months ago. The patient has returned for treatment very recently having been very little relieved by this extensive operation. To my mind this solitary ulcer can possibly be better treated by the actual cautery and suprapubic drainage than by large excision of the bladder wall.

Dr. Henry D. Furniss.—I have seen a number of cases of this type and one or two of the Hunner type and I may say they are well-named "elusive" for when we open the bladder it is sometimes difficult to find the ulcers. It is sometimes easier to find these ulcers with the cystoscope than by opening the bladder. I recently saw one of these cases in Dr. Brasch's clinic; the ulcer was found with the cystoscope but on opening the bladder the ulcer was seen with difficulty, and that has been my experience. Another case came under my observation some years ago in which we found a diseased area with the cystoscope and yet when we opened the bladder it was difficult to say where the real diseased area began.

In the treatment of granulating ulcers I have had success with the galvano and actual cautery, and by cauterization with silver nitrate through a Kelly endoscope. Where there is a small ulcer the silver nitrate forms a protecting coat over the ulcer.

There is one warning to be sounded in regard to using the cautery and that is that it may burn a portion of the bladder that you do not care to have burned. I recall one case in which I burned the portion outside the area I intended to treat with the handle of the cautery. I now use the Percy water-cooled instrument which acts like a caisson, prevents burning, keeps the bladder dry and protects from irritation. A short speculum is an advantage in treating the bladder.

I want to congratulate Dr. Barrows on his good result.

Dr. Hermann Grad.—I have had a few cases of these very troublesome ulcers of the bladder and in all of these cases I have used the cautery.

I recall one case of ulcer of the bladder in which I opened the bladder and cauterized the ulcer thoroughly and found nothing suspicious of malignancy. It was simply a solitary ulcer. That woman in eight months developed a carcinoma of the bladder, and though an extensive resection was done she developed metastases and died.

Dr. Barrows (in closing).—As to the capacity of the bladder—it held about 2 ounces at the time the operation was done and I put in between 8 and 9 ounces not long ago. It has not seemed to cause the woman much trouble and she usually has to get up only once at night. She is extremely stout and I think has gained upward of 100 pounds in weight so that it is difficult to do anything with an examination by Kelly method. Such a gain in weight does not look as though she had cancer. This lesion was too large for a so-called elusive ulcer and it seems as though it should be classified as a solitary ulcer.

Dr. Howard E. Lindeman presented a preliminary report on

CHRONIC TRIGONITIS IN THE FEMALE AND A NEW METHOD OF TREATMENT.

Irritable bladder in women may be due to several causes, some extrinsic and some intrinsic. Among the extrinsic causes might be mentioned pressure from the gravid uterus, uterine, ovarian or pelvic new-growths; distortion by extravesical new-growths; displacements by cystocele and prolapse, and following interposition operations on the uterus; congestion from general pelvic congestion due to inflammations, pregnancy, etc. The intrinsic causes include inflammations, cystitis, primary or secondary renal disease; new-growths; foreign bodies, including calculi, etc. There is a large and common group of cases in which the main symptoms are those of bladder irritability with a clear urine and no gross intrinsic or extrinsic pathology to explain them. In these cases careful examination with the cystoscope will reveal definite changes in the trigone as the chief pathological feature, and to this group of cases we apply the term cystitis coli or trigonitis.

The exact cause of the condition is not known. Age seems to be of little significance. It impresses me as being a little more common near the menopause, but I have seen many cases in younger women. It seems relatively as frequent in nulliparous and in parous women. In the parous women it seems to occur proportionately no more frequently in those with cystocele than in those with normal bladder support. That trigonitis is frequently the result of a preceding cystitis is certainly not true. Carey claims that trigonitis generally begins insidiously without any preceding bladder or other disease and I fully coincide with this opinion. Kelly and Byford have ascribed it to a hyperacidity due to improper metabolism, but I have seen typical cases of trigonitis with an alkaline urine. There is no satisfactory evidence that the gonococcus plays any important rôle in its occurrence and most cases show no evidence of recent or ancient gonorrheal infection.

The literature contains few references to the histological picture.

The onset of the disease is usually insidious with gradually increasing frequency of urination, especially by day, but somewhat also at night. With this there is usually no pain, but there is generally a sensation of incompleteness. There is an almost constant desire to urinate, and as the condition progresses the patient becomes more and more wretched. Occasionally there may be a slight terminal hematuria.

The condition may last for years, but is usually progressive. Cystoscopic examination shows the bladder capacity is generally considerable, often large, and the walls outside of the trigone of a normal pinkish-yellow color with clearly defined branching blood-vessels; occasionally there seems to be a moderately increased vascularity. There is usually an abrupt demarcation by the interureteric ridge, in front of which the mucosa of the trigone is swollen, dark red, intensely angry looking and cloudy. The contour of the vessels is usually far less distinct than in the remainder of the bladder wall. Scattered red spots resembling ecchymoses may be seen, and vary in size from mere specks to that of a poppy-seed. The mucosa is distinctly thickened and velvety; there is papillary hypertrophy which may proceed to the formation of small polypi.

In the treatment of trigonitis, rest in bed, diet modifications bladder irrigation and installations have all been tried with varying degrees of temporary success. I have used Knorr's treatment repeatedly and am obliged to state that the results have been far from satisfactory, and this seems to be the verdict with reference to all methods of treatment so far employed. For this reason, in 1916, I attempted to devise a treatment that would give better results. The outstanding features of the cystoscopic picture are intense congestion, hypertrophy and hyperplasia of the subepithelial blood-vessels and the swollen mucosa. Could anything cause the destruction or at least the constriction or compression and therefore reduce in size and possibly in number these blood-vessels? I knew that quinine and urea hydrochloride solution when injected into the tissues for the production of local anesthesia frequently, especially in the strength of over 1 per cent. caused a deposit of fibrin and a considerable induration at the point of injection, which induration frequently remained for months. I therefore decided to try this solution in the trigone, beginning with weak solutions to observe the effect and then gradually increased the strength. By degrees I evolved a needle for use with the Brown-Buerger cystoscope and with this I succeeded in making my injections and obtaining results that were most gratifying. The technic is not easy, in fact, quite difficult, and it has been only after repeated efforts that I have succeeded in making the injections where desired. Very little pain is given the patient and if she be reasonably tolerant a fairly large area can be injected at one sitting. Usually, however, from three to six treatments are required, but the relief from even the first treatment is so prompt that the patient readily consents to another sitting.

The instrument consists of a long flexible needle of No. 28 gauge fitted with a threaded end for attachment to a hypodermic syringe or preferably to an adapter which fits an all glass syringe with a slip joint. There is a hollow cannula of inside dimensions just sufficient to allow the needle to pass through it without binding. The outside dimension is about the calibre of an ordinary ureteral catheter. It is made of the same tubing that is used in reinforcing hypodermic needles. At the proximal end there is attached a small metal tube to serve as a finger grip.

In making the injection the patient is prepared as for an ordinary cystoscopic and ureter examination, about 200 c.c. of sterile water being left in the bladder. The instrument is sterilized and the cannula boiled. The cannula is then fitted into the catheter channel (right or left) of the catheterizing telescope and pushed in until the distal end rested on, but not beyond, the movable catheter directing arm. With the cannula in this position the needle is threaded through it until the point of the needle lies just within its distal end. The cystoscope is then introduced into the bladder, the obturator withdrawn and the prepared catheterizing telescope inserted. With the light turned on and under the guidance of the eye, the cystoscope is pushed into the bladder, rotated until the lens is down and the ocular end depressed until the vesical end can be seen to have been elevated well away from the bladder floor. The cannula is then pushed forward until the distal end enters the field of vision. The needle is now pushed forward through the cannula until the point is well into but not beyond the field of vision. The cannula is then withdrawn until well out of the field of vision, leaving about ½ inch of the needle free beyond the cystoscope sheath. The cystoscope is directed so as to bring the trigone into view, the point of injection determined, the directing arm-controlling screw turned, elevating the arm and directing the point of the needle downward toward the trigone. The syringe is then attached to the needle and some of the solution ejected until seen to flow in a fine blue stream from the needle, indicating that all air and water have been expelled. The needle is then made to enter the trigone at an angle at the point desired, and two or three drops of the solution are injected. When the blue solution is forced through if it is seen to float off in the surrounding fluid it is proof that the needle point is not buried. The needle is then withdrawn and entered elsewhere until as much of the trigone as is desired is infiltrated. It is advisable not to make the injections too close together. Hot continuous irrigation will tend to check the bleeding and keep the field of vision clear.

The solution consists of a sterile 2 to 2½ solution of quinine and urea hydrochloride in normal saline. It is colored rather deeply with methylene blue. For convenience the solution is kept in ampoules of 5 c.c.

Ordinarily four or five injections will be sufficient for the width of the trigone and only about four or five rows from behind forward are necessary. It is remarkable how little discomfort the treatment occasions.

The results have been most encouraging; there have been no bad results and no failure. Even when a weak solution was used the patients acknowledge that they experienced instant relief but it lasted only a few hours or at most three or four days. After the stronger solutions were used the relief was again instantaneous and of considerable duration.

DISCUSSION.

Dr. Furniss.—I certainly hope that further experiences with this method which Dr. Lindeman has presented will bear out the present promises because the great majority of these cases are intractable to the usual methods of treatment. Where there is an acute inflammatory condition it is more amenable to treatment with silver nitrate, while the condition in which one finds a metaplasia of the epithelial cells is very intractable; and there is not a great deal that we can do for them. We do not know what the real condition is because few pathological studies have been made as the patients do not often die from this condition. Some of the border-line cases have been studied. It seems that in some cases the whole trigonum is so filled with small vesicles so that it looks white.

It is perfectly easy to see that after giving quinine urea hydrochloride the patient would have relief for a few days owing to the anesthetic properties of this agent.

I think the needle which Dr. Lindeman has presented will have another use than the one he has described namely as a means of producing local anesthesia in the bladder, which will enable us to give certain kinds of treatment. I have advocated local anesthesia for some forms of treatment in the trigonum, but I never devised a way of applying it. I think Dr. Lindeman is to be congratulated for having conceived the thought of inventing such a device and for his ingenuity in perfecting it.

Dr. Lindeman, in closing, said.—In regard to the anesthetic effect of quinine urea hydrochloride, it is well known that this preparation is used for its anesthetic effect, and that in solutions stronger than 1½ or 2 per cent. it will have an anesthetic effect lasting from two or three days to a week, but my idea in using it was not for its anesthetic effect but because it caused the formation of fibrin around the vessels which was instrumental in destroying the vessels.

After this treatment one patient was practically relieved in three months and was doing well the last time I saw her about a year ago. She was very grateful for the relief afforded by this treatment and I feel sure would have presented herself if she had suffered a relapse. When I last saw her there was very little urgency in micturition and no sense of incompleteness.

The treatment is painless. It is remarkable that one can insert the needle to the depth of a quarter of an inch without causing the patient pain and without the patient having any knowledge of what is going on. It seems to me that if the results of this treatment are permanent or semipermanent and the patients get relief for from six to nine months this procedure is a distinct addition to the means at our command for the treatment of these cases. One or two treatments about a week apart is all that is required and this is followed by a really remarkable relief.

Dr. Herbert Thoms read a paper on

SOME EARLY OBSTETRICIANS AND THEIR WORKS.

(For original article see August issue.)

BOOK REVIEWS.

A MANUAL OF GYNECOLOGY.—By JOHN COOKE HIRST, M. D., Associate in Gynecology, University of Pennsylvania; Obstetrician and Gynecologist to the Philadelphia General Hospital. 12 mo. of 466 pages with 175 illustrations Philadelphia and London: W. B. Saunders Company, 1918. Cloth $3 net.

Dr. Hirst's manual is intermediate in extent between the formerly so popular "syllabus" and a text-book. The text is concise and contains an "accurate outline of the subject" as announced in the preface.

The subject matter is well arranged and as far as the space allows, complete.

The illustrations are gathered in rather a haphazard fashion. For example Fig. 139 supposed to represent a "post-menstrual endometrium" (it is likewise so labeled in the text-book from which it has been culled) could well do duty for a decidual cast in ectopic. Fig. 140 represents the "Goodman-von Ott wave" a ghost which the reviewer had considered long since laid to rest by the work of modern physiologists and metabolic chemists.

According to the author dysmenorrhea, not relieved by dilatation of the cervical canal, is due to cirrhosis of the ovary.

On the whole this manual will prove of use to students for rapidly reviewing the subject of gynecology in connection with a course of lectures. R. T. F.

OPERATIONS OF OBSTETRICS.—By F. E. LEAVITT, M. D., 441 pages, Illustrated, C. V. Mosby Co., St. Louis, Mo. Price $6.

This book is written by an experienced obstetrician in a pleasant style. It is complete, readable, and well planned. Each subject is concluded with a section giving the prognosis. Case reports are interspersed with judgment.

In a personal book of this type a greater emphasis in praise or condemnation of individual procedures would enhance the value of the book.

We cannot concur with the statement that in hydatid mole a "destructive process" is "going on in the uterine wall, which may become rapidly fatal." This is the exception, not the rule, otherwise we are dealing with chorionepithelioma.

While vaginal tamponage and "tents" are justly condemned in inducing abortion, no mention of the cervical gauze pack is made.

Another addition advisable in the second edition would consist of a description of the high incision in Cesarean section.

The book can be recommended as a good and safe guide to operative obstetrics. It is fully and adequately illustrated. R. T. F.

THE JOHNS HOPKINS HOSPITAL REPORTS. Volume xviii, 1919.

These reports present in a very complete form the original work published by the members of the staff of the Johns Hopkins Hospital. Among the articles of interest in the field of obstetrics and gynecology is one by E. D. Plass which presents a study of a case of congenital atresia of the esophagus with fused kidney. Dr. Plass has also surveyed the literature and found records of about 150 cases. A study of the known symptoms should lead to a recognition of this condition which undoubtedly occurs quite often but is unrecognized and death ascribed to other causes.

Dr. James B. Holmes reports a case of ectopia cordis in a fifteen months old infant in which the necropsy showed a patent interventricular septum with elongation and downward displacement of the left ventricle; depression of the diaphragm below the level of the costal margin, permitting the displaced ventricle to come in contact with the anterior abdominal wall; downward prolongation of the pericardial sac and hernial protrusion of the abdominal wall in the epigastric region.

Leonard and Dayton report two fatal cases following Percy's low heat treatment of carcinoma of the uterus in which extensive sloughing resulted and microscopic sections showed actively growing uninjured local carcinoma sixteen days afterward within 1 cm. of the previous site of the heating iron. The authors conclude that the rapidly fatal issue is brought about by conditions similar to those observed in cases of fatal cutaneous burns in addition to which local infection, general sepsis is favored. They also believe that we have no evidence that carcinoma is more susceptible to heat than is normal tissue. The remaining articles in this volume cover other departments of medicine and surgery. The work is a very creditable exposition of the large amount of original research work done by this important American institution.

THE BLIND. Their Condition and the Work Being Done for Them in the United States. By HARRY BEST, Ph. D., author of "The Deaf: Their Position in Society and the Provision for Their Education in the United States." The Macmillan Company, New York, 1919. Price $4.

This exceedingly useful book presents a survey of the subject limited largely to the United States, a comprehensive study of which has thus far been wanting. The author believes that we must regard the blind as certain components of the population of the State who demand classification and attention in its machinery of organization. We must examine the various problems that are raised by the presence of this group of persons and the measures that have been put forth to deal with the problems thus brought to view. The attitude of society toward the blind has hitherto apparently been chiefly one of compassion and the help extended to them limited to two forms—supplying means for educating blind children, and the more or less indiscriminate giving of alms to others.

During the development of these methods a question seems to have presented itself with more and more frequency and insistence. This, as the author states is whether after all blindness should itself be accepted as a settled condition and whether a considerable part at least of this affliction might not have been prevented. The preventive measures therefore occupy an important position in any work for the blind and this takes up the chief part of Dr. Best's book and is the part which, of course, will mostly interest medical men.

An analysis of about 30,000 cases of blindness made by the author shows that in only 54 per cent. are causes definitely reported. Of these nearly two-fifths are due to disease of which three-fourths are specific affections of the eye and one-fourth diseases of a general nature. Only about 13 per cent. of the cases of blindness may be ascribed to accidental or other injuries. Obstetricians will be interested to learn that ophthalmia neonatorum accounts for about 2 per cent. of all the cases. Statistics also seem to show that the cause of heredity upon blindness cannot be disputed and that the affliction may pass from one generation to another. The question of marriage among the blind is taken up and from a table it appears that the proportion of the single among the male blind, or about one-third, is rather below that of the general population, and that the proportion among the female blind, or somewhat less than ⅓ per cent. is about the same as that among the general population. The census investigation discloses that marriage of blind persons may be regarded as of not nearly so common a practice as of persons possessed of sight. As for marriage of the blind among themselves, precise information is not at hand but reports seem to show that there is a relatively small number of such marriages. The question of the effect upon consanguineous marriages is also discussed as well as possible action for the prevention of hereditary blindness. The author goes quite deeply into the subject of ophthalmia neonatorum and believes that the laws thus far employed have not been without influence though he thinks that no small part of the credit is due to the educational campaigns which have been conducted and to the increased attention to the matter by general health agencies, especially in follow-up work. There is a great deal more in the book of general interest and the author's encyclopedic presentation of the subject is worthy of including his work in every medical library.

RECORD OF CURRENT LITERATURE IN OBSTETRICS, GYNECOLOGY AND ALLIED SUBJECTS.

Titles marked * are abstracted in the current issue.

A. OBSTETRICS.

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*Clinical Study of One Hundred and Eight Cases of Ectopic Pregnancy. J. B. Hellier, *Practitioner*, vol. cii, April, 1919.

*Vicious Insertion of the Placenta. de Mores, *Revists di Gynecologia d'Obstetricia e de Pediatria*, vol. xiii, 1919.

*Cesarean Section for Hemorrhage from Vaginal Varices. Brunner, *Corres.-Bl. f. Schweizer Aerzte*, vol. xlix, 1919.

*Parallel Between Puerperal and Certain Kinds of Surgical Infection. Wallich, *La Presse Médicale*, vol. xxvii, 1919.

*Transmission of Malaria from Mother to Fetus. Gentili, *Anneli di Ostetricia e Ginesologia*, vol. xl, 1918.

*Infusion of the Placenta as Aid to Manual Extraction. Frey-Bolli, *Corres.-Bl. f. Schweiz. Aerzte*, April, 1919.

*Case of Extramembranous Pregnancy. Gonnet, *Rev. mens. de Gynec. d'Obst. et de Pediatrie*, vol. xiv, No. 90, 1919.

*Malta Fever and the Female Genitals. Emilie Santi, *Annali di Ostetricia e Ginecologie*, vol. xl, May–June, 1918.

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Cesarean Section for Hemorrhage. K. Brunner, *Corres.-Bl. f. Schweiz. Aerzte*, vol. xlix, No. 11, March 15, 1919.

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Pregnancy in a Case of Improved Sporadic Cretinism. W. E. Welz, AMER. JOUR. OBST., vol. lxxix, May, 1919.

The Prematurely Born. M. Reber, *Corres.-Bl. f. Schweiz. Aerzte*, vol. xlviii, No. 27, July, 6, 1918.

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B. GYNECOLOGY.

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SELECTED ABSTRACTS.

A. OBSTETRICS.

On Pregnancy Serum.—Kottman (*Correspondenz-Blatt für Schweizer Aerzte*, xlix, 1919, p. 434) writes at length on this subject which he has already repeatedly discussed in literature. The present communication refers to progress along the lines of research originally chosen. The reaction known by the author's name is based as follows: his placenta-iron preparation contains iron which is neither ionized nor susceptible of reaction. This is shown by the negative result with sulphocyanide combinations of alkalies. If the preparation is exposed to the action of pregnancy serum the presence of iron ions is shown by a positive result with the sulphocyanide test. This means that pregnancy in some way changes a nonionized and combined iron to soluble iron ions. Comparing behavior of this sort with phenomena seen in certain colloidal solutions the author infers that the reactions described by him are due to the operation of general laws which pertain to physical chemistry. In other words they are in no wise related to the laws underlying Abderhalden's reaction, for the latter is due to the activity of certain protein-cleaving enzymes. The actual motivation is the condition of the iron which is favorable for adsorption. How can gravidity set free adsorbable iron? Or how can the serum of the gravida mobilize iron? The fetus must play the effective rôle yet how can only be conjectured. The author is at present engaged in working out this problem. It is certain that fetal blood from the navel does not give the reaction and this fact may depend on the old discovery of Bunge that the fetus stores up iron. To explain the newly discovered power of the pregnant mother to mobilize iron we may invoke the stimulation of the blood-making apparatus of the mother as a physiological response to the needs of the fetus. We may range with this fact the known power of the gravid state to cure chlorosis. It will doubtless be shown that some of the pathology of the gravid state results from abnormal behavior of the blood. The author's reaction thus far is absent in dead fetus, notably in ectopic pregnancy.

Clinical Study of Ectopic Pregnancy.—J. B. Hellier (*Practitioner*, 1919, cii, 169) presents a clinical study of 108 cases under his care, which impressed him with the relative frequency of ectopic pregnancy. It generally occurs when there has been a long period of sterility, perhaps associated with old standing tubal disease, indicating some difficulty in the way of normal conception. The obscurity of the clinical history in the early stages is notable, especially due to the fact that amenorrhea fails to be a symptom of ectopic pregnancy. There is almost always vaginal hemorrhage when there has been intra-abdominal hemorrhage, and hence many cases are mistaken for cases of threatened abortion or of incomplete abortion. There are often recurrent attacks of abdominal pain, probably corresponding with recurrent intra-abdominal hemorrhages. The prognosis is favorable in the great majority of cases. Cases in which there is reason to think that hemorrhage is still going on should be promptly treated by abdominal section. Expectancy does not yield the best results in cases in which there is a large hematocele or one that remains unabsorbed for a long time. In only 10 per cent. of this series had the pregnancy advanced far enough for the development of a recognized fetus. Diagnosis before rupture is very rarely to be expected.

Vicious Insertion of the Placenta.—Under this title de Moraes describes four cases of placenta previa seen in the course of one month in the obstetrical service of the Casa de Misericordia at Rio (*Revista de gynecologia, d'obstetricia e de pediatria,* 1919, xiii, p. 3). The author objects to the adjective "previa" in these cases, which should be restricted to placenta previa centralis. The fetus may pass through a viciously inserted placenta, or pass beside or in front of the same. In the first case the condition of placenta previa was not recognized until after delivery. The condition noted was apparent absence of the organ in the expelled ovum and the immediate and final contraction of the empty uterus. There had been a marked hemorrhage when the waters ruptured. The case had been one of transverse position with prolapse of arm and cord, fetus dead on arrival at hospital, extraction after morcellation, tear in vagina reaching into cervix. It was assumed that the cervix and vagina were lacerated because of the insertion of the placenta, the uterus being in labor or perhaps because of attempts to extract by the prolapsed arm. The case is imperfectly reported. The second patient was confined with twins and central placenta. After the initial hemorrhage the choice of method was between Cesarean section and Braxton-Hicks version. The gestation was advanced but seven months. Intervention necessary to save mother. The cervix was dilated and the immature fetuses extracted through the placenta. The twins were of the bioval type. The mother's life was saved. The third case was one of central placenta previa with Braxton-Hicks version. The mother and infant were both lost. The fourth case was one of placenta previa lateralis, fetus dead on admission. The placenta was also bilobate with velamentous insertion of the cord. In the members of this brief series the five fetuses apparently had no chance of survival at the hands of the maternity authorities, while of the four mothers three survived. Cesarean section in the interest of the fetus was clearly too early or late.

Cesarean Section for Hemorrhage from Vaginal Varices.—Brunner (*Correspondenz-Blatt für Schweitzer Aerzte,* 1919, xlix, 321) refers to the rarity and extreme gravity of rupture of varicose veins in the vulva and vagina during pregnancy and labor. The infrequency is shown by the statistics of Sickel who in 12,612 cases of labor saw this accident but twice. On the other hand Streng saw 6 cases in 2936 confinements. In 1894 Wüllmer collected notes of 15 cases of ruptured varix during gravidity and of this number all but two ended fatally. He also compiled notes of 16 additional cases during labor, 7 of which ended fatally. Rupture during gravidity is due usually to a trauma and occurs during the last three months. During labor the accident occurs during the passage of the head or introduction of forceps. The loss of blood is enormous and in many cases death occurs in less than half an hour. Therapy is most difficult and in virtue of the impotence of the surgeon to check the hemorrhage and the absence of a prophylaxis Cesarean section seems the logical procedure. This was perhaps first done by Brunet in 1906. Rupture occurred spontaneously in the primigravida. Clamps bit through the softened tissues and a tamponade followed which was efficacious as long as it remained in place but upon removal bleeding was active as at first. Labor set in after a new tampon was inserted. Six clamps also gave some hemostasis. Abdominal Cesarean section was now successfully performed. The author is unable to find another case in literature so that his case is apparently the second on record. His patient was a multipara of thirty-eight who had had no vulvar varices in her six earlier pregnancies. Labor was under way before varices were recognized in the vagina. Application of forceps on indication provoked rupture. Clamps were used within the vagina until two points could be ligatured. Renewed forceps attempt caused new bleeding, with threatened exsanguination. Cesarean section. Vagina tamponed with iodoform gauze. Recovery. The child was unusually large and weighed nearly 5000 gm. The varices in such cases may be likened to cavernous angiomata.

Parallel Between Puerperal and Certain Kinds of Surgical Infection.—Wallich (*La Presse Médicale*, 1919, xxvii, 162) recalls that thirty years ago the cavity of the puerperal uterus began to be regarded as a true wound surface. With our recent war experience we can isolate certain lesions which illustrate this similarity. The uterine mucosa must undergo degeneration at the close of gestation in order that the ovum may detach itself. This degenerated surface resembles a slough which forms an ideal breeding ground for germs. The microörganisms are the same in both conditions and in both general infection may occur, with the streptococcus as chief offender. Many other microörganisms coexist at first, anaerobes are succeeded by aërobes and as a result of multiple germ activities phagocytosis follows as a defensive force. The flora tend to succomb to this defense but the streptococcus possesses the greatest power of survival. It differs in virulence with the case and may or may not be hemolytic. The persistence of the streptococcus does not appear to be due to the faculty of robbing other germ life of its nutriment but rather to the inability of the organism to immunize against it. Suture is now regarded as contraindicated in streptococcus wounds. The intradermo-reaction also shows that individuals react very differently to the streptococcus. The fever curves, pulse behavior, etc., also agree in the two kinds of lesion. The principles of treatment are also the same in each. The use of the curet in the puerperal uterus has its analogue in the shaving and paring of an infected wound surface with the bistoury. In both types of lesion antistreptococcus serum gives good results. Both the surgeon and accoucheur have learned from the other and can doubtless continue to learn.

Transmission of Malaria from Mother to Fetus.—Gentili (*Annali di Ostetricia e Ginecologia*, 1918, xl, 37) relates a series of 29 cases of this kind of transmission, the tabulation of which shows material from many sources and transmission in its several phases. Intrauterine malaria naturally means the same thing, but as nearly every child was born at term our knowledge of fetal malaria must be far behind that of malaria in the newly born. There was but a single documented case in a premature. This child was born in the seventh month and lived but one hour. The heart blood at once after birth contained plasmodia of the same type as the mother. The state of the spleen is not mentioned. The mothers suffered from various types of malaria, some having chronic cases while others developed acute cases at various stages of gestation. The first case was recorded in 1892, the woman having been infected abroad, long before conception. Gravidity caused an acute exacerbation. Labor set in during an access of fever. The infant showed fever for several months after birth but it is not impossible that the malaria was acquired from mosquitoes after birth. The same uncertainty attends other of the earlier cases and the mere presence of hematozoa in a young nursling is not proof of maternal transmission. In an ideal case the birth occurs in a country free from malarial mosquitoes so that the maternal malaria is exotic in origin. There are a number of examples of women who became infected in the tropics but returned to Europe for confinement, labor taking place in districts free from the disease. It is not necessary for the child to develop fever until some time has expired. The seventh day after birth is the shortest interval mentioned and the longest forty days. The fever and the hematozoa are often of the same type in mother and fetus—probably in all cases in which the parallel was examined. Enlargement of the spleen soon after birth is mentioned in some of the cases.

Malta Fever and the Female Genitals.—Santi Emilio in the *Annali di Ostetricia e Ginecologia* (May–June, 1918, xl, p. 89), cites a few cases in which gestation was interrupted by Malta Fever or a puerperal sepsis due to Bruce's micrococcus was the diagnosis. The author is able to relate two personal cases which should equal in importance the somewhat antiquated material now on record. The first patient was a nullipara of thirty-five married only two years. The menses had always been silent and uneventful when of a sudden she had a painful period. At this time she was running an evening temperature with chilly attacks. Other symptoms were backache and leukorrhea. She went along in this fashion for five months, her periods being painful although less so than at first. At this juncture she came to the clinic. Here the external and internal genitals were found normal with exception of an exaggerated anteflexion of the uterus, which was moreover fixed, while the left adnexa was in a condition diagnosticated as salpingo-oöphoritis which might be held responsible for the evening temperature. All other examinations gave negative results. It was evident that the patient's condition was aggravated by the menses. The lesion of the broad ligament was either tuberculous or due to Malta fever. The latter prevailed in the patient's habitat and a positive agglutination test clinched the diagnosis in favor of that affection. As no specific measures were available the patient was treated along general indications and eventually the infiltration of the broad ligament disappeared. The second case appears to have been similar, with the actual focus of disease in the right adnexa. The slow fever with evening rise, the backache and adnexal symptoms, which suggest a possible tuberculous invasion, led to a positive agglutination test to the micrococcus melitensis. The aggravation of the symptoms at the menstrual epoch also seems a feature of this case.

Infusion of the Placenta as Aid to Manual Extraction.—This resource, published in 1914 is described by Frey-Bolli in the *Correspondenz Blatt für Schweizer Aerzte* for April 19. It is said that the idea goes back at least a century before 1914, when two Italians made claims of priority for the discovery and that text-books in the first half of the 19th century described the method of infusing the placenta with a syringe to facilitate its extraction; but the method fell into disuse, to be rediscovered in 1914 by Gabaston. To complete the history—Nagaele of Heidelberg in 1827 announced the discovery by Mojon of the new method. Although spoken of as a Frenchman Mojon was at this time emeritus professor in Genoa. When he first conceived the idea and executed it is not stated. However by a striking coincidence one Dr. Astrubali of Rome had announced in the Piedmont Journal for June 4, 1826, that he had employed this method since 1814. During the period 1826–9 at the Marburg Clinic seven cases of adherent placenta were treated by "Mojon's method," that is the injection of the umbilical vein. Since its rediscovery it is recognized that the infusion increases the mass of the placenta and thus favors its separation, constituting a mechanical resource. The modern name of the latter is the "turgescence of the placenta" and is sprang into routine use in some clinics during the war. For example, it has been used regularly in Frankfort since 1915. In addition to the action of turgescence the placenta thus treated probably excites the uterus to renewed contraction. As a corollary it may be stated that the placenta by losing its normal elasticity is the more readily expelled. The natural indication is retained placenta; doubtless in the very rare placenta accreta the utility of the method is not guaranteed, for in the only case to occur in the clinic since the method was introduced the placenta was extracted manually. In ordinary retained placenta due primarily to cessation of pains, from 300 to 600 c.c. of sterile saline infusion are thrown into the vein under moderate pressure. Apparently, however, the treatment is never indicated unless there is some escape of blood from the uterus. Of 3201 labors the method was indicated in fifty-three. The pressure should be moderate and only enough injected to give the placenta an elastic feel. If too much is forced in the vessels rupture and the fluid makes its exit. If the method does not work the first time it is repeated in an hour even in the absence of renewed hemorrhage. But if bleeding occurs a second time the method should also be repeated. Only when the bleeding fails to stop should one resort to Credé's method. When bleeding is stopped after repeated infusion one waits for spontaneous expulsion. The cleanest results are seen in women who have been confined in the clinic. When brought in with retained placenta the effects of infusion are for some reason less satisfactory.

Case of Extramembranous Pregnancy.—Gonnet (*Revue mensuelle de gynécologie d'obstetrique et de pédiatrie*, 1919, xiv, 90) states that this subject is well known since the publication of Glaize's monograph in 1899. The total number of cases now on record is probably not far from forty. The author adds an observation made in 1913; a para-iii of twenty-nine years has two living children. Menses regular, rather scanty and last three days. She came to a maternity in August and labor was fixed at about October 28 as the past period went back to January 20th. In the first half of pregnancy she had had two hemorrhages—pseudomenstrual—and on August 11th a severe bleeding which led to the diagnosis of placenta previa. Aside from these formal hemorrhages there were a number of episodes of spotting. The large hemorrhage was what had brought the patient to the clinic. Here she flowed steadily for ten days and the case began to look less and less like a previa, so that the diagnosis was changed to that of a possible decidual hydrorrhea with endometritis. To account for the latter there were amniotic hydrorrhea and extramembranous gestation. No differentiation was possible. On August 12th labor set in and after seven hours the child was expelled breech first and in suspended animation. It was reanimated only to succumb in several hours. The placenta appeared at the vulva, maternal face first. There was no further hemorrhage, and the puerperium was normal. On the fetal aspect the placenta was seen to be marginate. Rupture of the membranes had evidently occurred some weeks ago and the fetus had led an extramembranous existence. Of etiology it is useless to speculate and of the symptoms there was but one—hydrohematorrhea. Like most cases on record the fetus presented by the breech and the placenta was marginate. The child presented no malformation. In deliveries such cases would doubtless be invariably confused with placenta previa.

B. GYNECOLOGY.

The Special Supports of the Uterus.—A. F. Dixon (*Dubl. Jour. Med. Sci.*, Apr. 1, 1919, 149; *Med. Press*, 1919, n.s. cvii, 237) states that the important function of the levator ani, not merely as a support and an elevator of the pelvic floor, but also as a sphincter of the rectum, is generally acknowledged. The special supports of the uterus are active, not passive, and are due to the bundles of smooth muscle fiber in the subperitoneal tissue. The support is mainly applied at the lateral aspect of the cervix uteri and at the lateral fornix of the vagina. Here the subperitoneal tissue is packed with smooth muscle and connective tissue fibers, which radiate outward along with the vessels and nerves. This dense subperitoneal tissue lies partly between the layers of the broad ligament, where they diverge as they reach the pelvic floor. The dense mass is continuous with the muscular wall of the cervix uteri and vaginal fornix, and not merely adherent to these structures, and in front of them it is continuous in the muscular wall of the lateral angle of the bladder, and forms the "uretral sheath." Much of the smooth muscle is derived from, and is continuous with, the muscular walls of the vagina and bladder. When the muscle bundles are traced away from their attachments to the uterus and vagina they disperse in a radiating manner. Some sweep backward, or backward and somewhat upward, and lie in the anterior wall of the rectouterine pouch, or enter the sacro-genital fold of peritoneum; others pass more laterally, or laterally and somewhat upward, toward the side wall of the pelvis.

Reconstruction of the Uterus.—For cases in which it is desirable to preserve the reproductive function, C. B. Robins (*Surg., Gyn. & Obst.*, 1919, xxviii, 516) favors resection of the tumor-bearing portion of the uterus and suture of the remaining lateral portions. It permits inspection of the uterine cavity and is preferable to removal of submucous fibroids which are still within the cavity of the uterus and the myomectomy providing the tumors are so situated that all can be removed in this way.

Treatment of Urinary Disturbances with Electricity.—Encouraged by the results obtained in children and soldiers by electrical treatment of cases of nocturnal enuresis, F. Hernaman-Johnson (*Practitioner*, 1919, cii, 239) has so treated several cases of urinary disturbance, mostly distressing frequency of micturition, in women. In these it is particularly necessary to look for causes, for their organism is so constructed as to present more possibilities of reflex disturbance than that of men; kidney mobility, resulting sometimes in kinks and twists of the ureter, is a common source of trouble. Coli infection of the urine is more frequent than in the male; rectal constipation and disturbances of a menstrual nature are not seldom a contributory cause. These patients do well upon a combination of the high-frequency rectal electrode with rhythmical sinusoidal current to the abdomen, always provided that it has been found possible to remove all obvious sources of irritation. When there is excessive pain and bleeding during the menstrual periods, especially when these are unduly prolonged, and tend to come at too frequent intervals, it is often impossible to cure the urinary condition without first, or at any rate contemporaneously, dealing with the dysmenorrhea. The latter, especially when the hemorrhagic type, can be successfully dealt with in most cases by small doses of hard *x*-rays given two or three times a week in the menstrual intervals, for three to four months. A regulation of excessive ovarian activity is what is aimed at, there being no desire to abolish the periods.

Spontaneous Expulsion of Gauze Sponge from the Urinary Bladder.—In a case recorded by G. P. La Roque (*Surg. Gyn. & Obst.*, 1919, xxviii, 522) a clean gauze sponge was left in a clean pelvis but no symptoms resulted during a period of five years. Suddenly severe tenesmus developed, with marked suppuration, and three weeks later the sponge was passed as far as the meatus and then removed by traction. Relief was rapid and in a week the fistula through which the gauze had entered the bladder had practically healed.

Gynecological Pelvic Drainage.—J. W. Bovée (*Surg. Gyn. & Obst.*, 1919, xxviii, 514) advocates the use of Fisher's paraffine-stearine gauze for vaginal drainage from the pelvic peritoneum, either alone or as a casing for a drain of plain gauze. It does not adhere to the tissues and at body temperature softens so as to mold itself as smoothly as plain gauze. It may be relied upon to protect denuded pelvic peritoneum sufficiently long for endothelialization under it to occur, thus avoiding adhesions of intestine and omentum to denuded areas. This gauze is prepared by impregnating it with a mixture of equal parts of paraffine and stearic acid.

The Dynamics of Abdominal Herniæ.—H. R. Frick (*N. Y. State Jour. Med.*, 1919, xix, 166) states that the most potent force in the production of abdominal herniæ lies latent *inside* the bowel and is applied from within, outward, *i.e.*, increased intravisceral pressure due to concentric compression exerted by the muscles of the abdominal wall. Developmental defects do not cause herniæ, but they represent the sites of potential herniæ and are more probably the result of this force applied during intrauterine life. Proper repair of the transversalis fascia determines the integrity of the abdominal wall at that point. This theory differs from the theory suggested by Alexis Moschcowitz, only in an attempt to describe the forces in detail.

Enterostomy as an Emergency Measure in Treatment of Intestinal Obstruction in Cases of General Peritonitis Following Purulent Appendicitis.—A. L. Hageboeck and L. H. Kornder (*Jour. A. M. A.*, 1919, lxxii, 1066) say that in the treatment of acute gangrenous and purulent cases of appendicitis with general peritonitis and no walling off, it is of paramount importance to establish free drainage in order to encourage the discharge of pus and infective fluids from the abdominal cavity. If this is insufficient, and drainage ceases owing to a dry peritonitis so common in intestinal obstruction and paralysis, then the latter must be relieved by the performance of an enterostomy. It is not the appendicitis or even the peritonitis, *per se*, that kills, but rather that it is the toxins which these have caused to accumulate in a gangrenous and paralyzed bowel. Relieve that, and the reward will be the restoration of life and health to the patient in a large percentage of so-called hopeless cases.

Permanent Colostomies.—For cases in which it is necessary to make permanent colostomies the following operation, described by W. E. Sistrunk (*Surg.*, *Gyn.* and *Obst.*, 1919, xxviii, 436), has been found the most practical of any which have been employed in the Mayo Clinic. The incision is vertical, below and about 1 inch to the left of the umbilicus. A loop of the sigmoid is utilized because of its mobility. After lifting it out of the abdomen, an incision from 1½ to 2 inches in length is made through its mesnetery, parallel to the direction of the blood-vessels and extending upward nearly to the bowel. An incision about 1 inch long is made across the end of the first incision quite near the mesenteric attachment of the bowel. Two strips of gauze are placed in the upper end of this T-incision and are pulled apart. Through the opening thus created in the mesentery the two sides of the entire abdominal wall are sutured together. The remaining portions of the incision are then closed; a small bite of the bowel being included in two of the sutures to prevent herniation of a loop of small intestine. When the gauze has been removed a glass rod or rubber tube is placed through the opening in the mesentery between skin and bowel to serve later as a guide in cutting across the bowel. If necessary for gas distention, a small opening may be made in the bowel after twenty-four to forty-eight hours, and in five to six days the bowel is cut across completely with the cautery. The protruding stumps of intestine may subsequently be shortened if desired.

Sterility.—G. M. Gelser (*N. Y. State Jour. Med.*, 1919, xix, 174) says that sterility is more frequently attributable to the male than to the female. The causes of sterility may be classified under the following heads: (1) Obstruction in the generative tract of the male. (2) Obstruction in the generative tract of the female. (3) Absence of or deficient development of spermatozoa. (4) Absence of or deficient development of ovum. (5) Alterations in the female secretions which are inimical to the spermatozoa. (6) Hemolytic action between the secretions of the male and female which are destructive to the spermatozoa. Where there is obstruction in the male generative tract, a semen is discharged with absence of spermatozoa. Obstruction in the male generative tract may be due to traumatism or tuberculosis, but in the vast majority of cases it is due to an old gonorrheal infection. Obstruction in the female generative tract commonly occurs at the cervix and in the Fallopian tubes. The size, shape, direction of cervix and the situation of the os are of great importance. Obstruction in the Fallopian tubes results from infection, most commonly gonorrheal, closing either the fimbriated or uterine end, or from inflammation outside the tubes resulting in closure of fimbriated end. Obstruction in the tubes may be diagnosed by palpation if tube is thickened or distended, by injection of collargol into uterine cavity and demonstration of its passage through tubes by *x*-ray, by evidences of pelvic inflammation and adhesions, by laparotomy and catheterization of the tubes, or by inference on recovering motile spermatozoa from uterine cavity several hours after intercourse, showing there must be either an obstruction in the tubes or deficient ovulation. The deficient development of spermatozoa is shown by the degree and character of their motility. Alterations in the ovary, producing infertility, are due: (1) To deficient development, (2) to the presence of numerous small or medium sized retention cysts accompanied by thickening of the capsule, (3) or to the presence of a persistent corpus luteum. These alterations in ovaries are usually accompanied by alterations in the lower genital tract. Excessive obesity and mental overwork also inhibit ovulation. The secretions of the woman act as the medium or host for the spermatozoa and ovum to live in until their union. Alterations in secretions may be due either to gross pathological lesions or to minor physiological derangements which render the secretions hostile and cause the destruction of the spermatozoa. Next to the absence of the male element, the most common cause of sterility is alteration of some of the female secretions. These alterations may originate in the vagina, cervix, uterine or Fallopian tubes, and any alteration in secretion from a higher point, necessarily alter the secretion in those of the lower areas over which they drain. When vaginal secretion is excessively acid or the vitality of spermatozoa is weak, destruction takes place rapidly and relatively few actively motile spermatozoa survive to reach the cervical canal. The normal cervical secretion is alkaline, clear, translucent, about the consistency of the white of egg and small in amount. This secretion is altered both in character and amount, due to cervical stenosis, lacerations, diseased discharge from the uterine cavity or Fallopian tubes, but most frequently from diseased condition of cervical mucous membrane as a result of infection, most commonly gonorrheal. Secretion in uterine cavity is normally small in amount, thin and serous and not hostile to spermatozoa. When cervical stenosis or obstruction is present, however, secretion is altered because of lack of drainage and becomes thickened, cloudy, mucopurulent or seropurulent. The same secretion may be present in uterine cavity from drainage into it from infected tubes. The Fallopian tubes are the common site of infection, usually gonorrheal, and here take place the most marked changes. To satisfactorily diagnose and treat each individual case, it is essential to first obtain a complete history of the sterility and the sexual habits of the couple. Then the complete history of the past health of both parties, both general and genital, and also their general habits, hygiene and mode of life. Next a thorough examination of the woman, under anesthesia if necessary, should be made to detect any gross pathological lesions. The next step should be an examination according to a method recently brought out by Max Huhner of New York in which a microscopical examination is made of the spermatozoa in the secretions of the woman during the passage through the generative tract, whereby accurate information is given of the vitality of the spermatozoa in the several secretions of the woman. When the sterility is attributable to the male, the treatment is operation for obstruction cases, glandular therapy for deficient spermatogenesis, regulation of mode of life, habits, environment, improvement of general health and hygiene. Hyperacidity of the vaginal secretion may be treated by alkaline douches, alkalies by mouth to overcome systemic acid, depletion to relieve pelvic congestion, etc. Cervical obstruction may be treated by dilatation, plastic operation or direct uterine insemination. Cervical infection with alteration of cervical secretion should be treated by repeated disinfection, cauterization, plastic operation removing cervical mucosa, or direct uterine insemination. In either of the foregoing instances, where spermatozoa are weak, vaginal or cervical secretions hostile, or cervical canal obstructed, direct uterine insemination gives promise of being the most efficient procedure. When abnormality is definitely found in the uterine cavity it may be advisable to gently curet the uterus but this should never be done without positive indication and frequently does much harm. Occasionally plastic operations on the Fallopian tubes and on grossly diseased ovaries are beneficial, but these should never be done until all other etiological factors have been eliminated. Where ovarian or uterine under development is present, glandular therapy gives some hope of success.

ITEM.

BIRTH STATISTICS.

Census Bureau's Preliminary Report for 1917.

The following important report has just been issued. In the birth-registration area of the United States 1,353,792 infants were born alive in 1917, representing a birth-rate of 24.6 per 1000 of population. The total number of deaths in the same area was 776,222, or 14.1 per 1000. The births exceeded the deaths by 74.4 per cent. For every state in the registration area, for practically all the cities, and for nearly all the counties, the births exceeded the deaths, in most cases by considerable porportions. The mortality rate for infants under 1 year of age averaged 93.8 per 1000 living births. The foregoing are among the facts brought out by the Census Bureau's annual compilation of birth statistics.

The birth-registration area, established in 1915, has grown rapidly. It comprised, in 1917, the six New England states, Indiana, Kansas, Kentucky, Maryland, Michigan, Minnesota, New York, North Carolina, Ohio, Pennsylvania, Utah, Virginia, Washington, Wisconsin, and the District of Columbia, and had an estimated population of 55,000,000, or about 53 per cent. of the estimated total population of the United States in that year.

Comparison with 1916.

The birth-rate for the entire birth-registration area fell below that for 1916 by two-tenths of one per 1000 population; but the death-rate was less by six-tenths of one per 1000 than in 1916. Thus the excess of the birth-rate over the death-rate for 1917, which amounted to 10.5 per 1000, was somewhat greater than the corresponding excess for 1916, 10.1 per 1000, although it fell slightly below that for 1915, 10.9 per 1000. If the birth- and death-rates prevailing in any one of these three years were to remain unchanged, and if no migration were to take place to or from the area to which they relate, its population would increase at the rate of slightly more than 1 per cent. per annum, or a little more than 10 per cent. in a decade. This would be about half the rate—21 per cent.—by which the entire population of the United States increased between 1900 and 1910.

White and Colored.

Of the total number of births reported, 1,280,288, or 24.5 per 1000, were of white infants, and 73,504, or 25.8 per 1000, were of colored infants. The death-rates for the two elements of the population were 13.7 and 22.5 per 1000, respectively.

Infant Mortality.

The infant mortality rate—that is, the number of deaths of infants under 1 year of age per 1000 born alive—throughout the birth-registration area as a whole was 93.8 in 1917, as against 101 in 1916 and 100 in 1915. This is equivalent to saying that in 1915 and 1916, of every 10 infants born alive 1 died before reaching the age of one year, whereas in 1917 the corresponding ratio was a trifle more than 1 in 11. Among the 20 states these rates ranged from 67.4 for Minnesota to 119.9 for Maryland; and for the white population separately the lowest and the highest rates were 66.3 for Washington and 109.5 for New Hampshire.

The infant mortality rates vary greatly for the two sexes and for the various nationalities. The rate for male infants in 1917, 103.7 per 1000 living births, was nearly 25 per cent. greater than that for female infants, which was only 83.3. When the comparison is made on the basis of race or nationality of mother a minimum of 66.2 per 1000 births is shown for infants with mothers born in Denmark, Norway, and Sweden, and a maximum of 172.6 for infants with mothers born in Poland, while for Negro children the rate was 148.6.

Plural Births.

The reports from the registration area show the birth of 14,394 pairs of twins and 155 sets of triplets in 1917—in all, 29,253 infants, or a little more than 2 per cent. of the total number born.

Number of Children per Family.

The reports for 1,241,722 of the births occurring in 1917 contained information as to number of child in order of birth. Of these reports, 339,042 were for the first child born to the mother, 264,044 for the second child, 191,528 for the third, 134,331 for the fourth, and 95,931 for the fifth. In the remaining 216,846 cases, or 17.5 per cent. of the entire number for which information upon this point was obtained, the total number of children borne by the mother was 6 or more; in 37,914 cases it was 10 or more; in 1600 cases, 15 or more; in 56 cases, 20 or more; and in one case, that of a colored woman, the birth of a twenty-fifth child was reported.

The total number of children borne by the mothers who gave birth to these 1,241,722 infants in 1917, in whose cases data were available as to previous births, was 4,093,908. The reports for 1,194,621 of the births occurring in 1917 contained information as to the entire number of children borne by the mothers and still living, and gave a total of 3,443,466, or an average of very nearly 3 living children in each family in which a birth took place in 1917.

States and Cities.

The following table shows, for the birth-registration area, by states and by cities having more than 100,000 population in 1910, the number of births in 1917, the percentage of excess of births over deaths, and the infant mortality rate. The figures for the white and colored elements of the population are shown separately for those areas in which colored persons constituted more than one-tenth of the total population.

BIRTHS, EXCESS OF BIRTHS OVER DEATHS, AND INFANT MORTALITY, 1917.

Area	Number of births	Excess of births over deaths (per cent.)	Deaths of infants under one year of age per 1000 living births
Registration area, total	1,353,792	74.4	93.8
White	1,280,288	79.8	90.5
Colored	73,504	14.9	150.7
Registration, states.			
Connecticut	37,481	80.0	93.8
Indiana	63,144	58.9	85.8
Kansas	38,601	87.0	77.5
Kentucky	61,698	88.5	87.1
Maine	16,651	42.7	93.3
Maryland	33,963	44.9	119.9
White	27,519	60.1	100.9
Colored	6,444	3.1	201.0
Massachusetts	95,673	68.8	97.9
Michigan	89,159	89.2	88.3
Minnesota	54,795	129.1	67.4
New Hampshire	9,569	28.3	109.6
New York	246,019	59.8	91.4
North Carolina	76,290	124.6	99.6
White	52,850	158.2	84.8
Colored	23,440	73.6	133.1
Ohio	120,949	57.2	92.1
Pennsylvania	222,505	73.6	111.0
Rhode Island	15,286	60.7	107.5
Utah	13,630	195.3	69.4
Vermont	7,553	38.1	85.0
Virginia	60,753	92.7	97.8
White	41,924	132.7	80.4
Colored	18,829	39.4	136.5
Washington	23,464	93.3	69.3
Wisconsin	59,124	103.0	77.8
Registration, cities having more than 100,000 inhabitants in 1910.			
Connecticut:			
Bridgeport	5,109	125.1	87.1
New Haven	5,161	98.3	83.7
District of Columbia:			
Washington, total	7,485	13.3	97.4
White	5,250	31.7	70.9
Colored	2,235	−14.7[a]	159.7
Indiana:			
Indianapolis	5,955	30.0	95.2

[a] Percentage by which births fell below deaths.

BIRTHS, EXCESS OF BIRTHS OVER DEATHS, AND INFANT MORTALITY, 1917.—*Continued.*

Area	Number of births	Excess of births over deaths (per cent.)	Deaths of infants under one year of age per 1000 living births
Kentucky:			
Louisville	4,112	4.9	96.5
White	3,593	25.9	86.6
Colored	519	−51.3[a]	165.7
Maryland:			
Baltimore	15,040	32.5	118.4
White	12,645	51.2	103.4
Colored	2,395	−20.0[a]	197.1
Massachusetts:			
Boston	19,877	56.5	99.1
Cambridge	2,763	72.1	74.6
Fall River	3,807	79.9	158.9
Lowell	3,289	69.5	140.2
Worcester	5,280	89.3	94.9
Michigan:			
Detroit	26,298	124.1	103.2
Grand Rapids	3,051	75.5	82.6
Minnesota:			
Minneapolis	8,675	96.6	71.5
St. Paul	5,151	89.1	73.6
New York:			
Albany	2,259	10.8	108.9
Buffalo	13,487	76.3	104.0
New York	141,234	79.9	89.0
Rochester	6,938	69.9	84.2
Syracuse	4,199	73.1	102.4
Ohio:			
Cincinnati	7,817	14.5	88.0
Cleveland	20,274	87.2	108.9
Columbus	4,398	30.0	87.8
Dayton	3,311	61.1	96.0
Toledo	5,684	59.4	95.4
Pennsylvania:			
Philadelphia	42,788	44.3	108.4
Pittsburgh	16,543	55.4	119.9
Scranton	3,298	46.8	147.7
Rhode Island:			
Providence	6,395	60.0	101.6
Virginia:			
Richmond	3,790	29.3	136.1
White	2,500	59.6	93.6
Colored	1,290	−5.6[a]	218.6
Washington:			
Seattle	4,876	92.7	60.5
Spokane	2,104	81.1	62.3
Wisconsin:			
Milwaukee	11,289	106.7	99.7

[a] Percentage by which births fell below deaths.

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ORIGINAL COMMUNICATIONS.

A CLINICAL STUDY IN PREOPERATIVE AND POSTOPERATIVE BLOOD PRESSURES AND THEIR RELATION TO RENAL FUNCTION AND IN SHOCK AND HEMORRHAGE.*

BY
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(With six charts.)

GYNECOLOGICAL surgery, unlike much of the acute surgery of the general surgeon, is usually subacute or chronic, consequently women who are about to undergo gynecological operations for the relief of their symptoms, repair of injuries or restoration of functions and general health, are commonly of lower physical tone, and more exhausted physically than those suffering from the acute injuries which demand immediate surgical intervention. Sufficient time is therefore allowed for a careful preoperative study of their lesions, as well as of their cardiac force and renal functions. The trained gynecic surgeon is learning more and more to appreciate what this preoperative study means in reducing his morbidity and his mortality.

For the past five years, at the Long Island College Hospital we have operated on no case which has not been in the hospital for a sufficient length of time to *allow a preoperative diagnosis*, and the proper laboratory examinations of the blood, urine, pulse-pressure,

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NOTE.—The Editor accepts no responsibility for the views and statements of authors as published in their "Original Communications."

kidney function and comparative temperature records. By insisting on this, many women who would have been bad operative risks, owing to their poor muscular tone, cardiac weakness or deficient kidney function, have been saved from postoperative complications and have been restored to health with smooth convalescence.

While working along these lines we have made an attempt to determine the clinical value of preoperative pulse-pressure and its relation to kidney function, on the operative prognosis of gynecologic patients.

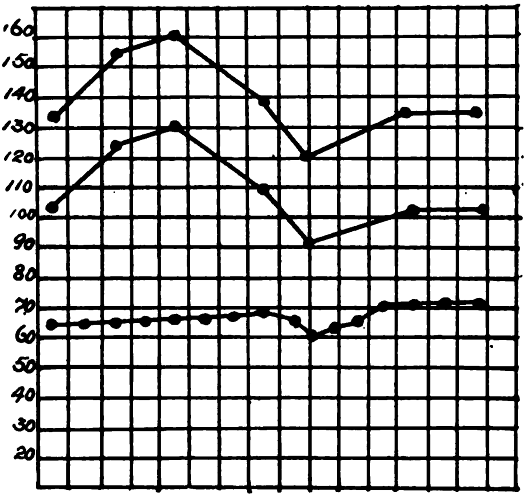

FIG. 1.—The above and the following charts present records of blood pressure observations (upper line, systolic, middle line, diastolic) and phenolphthalein output records (lower line) in a series of operative cases. Fig. 1 shows the normal findings, in which the successive dots on the upper two lines refer successfully to blood pressure readings at rest, after moderate and active exercise, at operation, and then six, twenty-four and seventy-two hours later.

In order to make these determinations, the following preoperative routine has been adopted.

On admission the cardiac force of each patient is studied in the following manner: The systolic and diastolic pressure is taken, with the patient in the recumbent position and the pulse and pulse-pressure noted at rest. The patient is then seated on a stool, and instructed to raise her arms and extend and flex the forearms for two minutes, when the systolic and diastolic pressure is again taken, and the pulse-pressure is again recorded, as after moderate exercise. Finally, the patient is made to stand up, with the legs spread apart, and is directed to raise a pound weight lying on the floor, between the feet, up over her head, then lower it between her legs, then raise it again, and lower it, repeating these motions, at first, ten times, then twenty times, when the systolic and diastolic pressures are again taken, and recorded, as after active exercise. Naturally, the rate of the heart action is accelerated and the systolic pressure raised, but if the heart muscle is of good quality, little, or no change is noted in pulse pressure, which should bear a relation to the systolic pressure of one to three, or more. When this relation is broken and the pulse-pressure is one to two, or two and one-half, our experience has been that the cardiac muscle of that individual is defective and does not stand a long operation in the Trendelenburg posture. For instance: The average pulse pressure, in some 300 patients examined, is about 35 mm. of mercury, and the average systolic pressure of the gynecologic case is about 130. This gives us a relation of a little more than one to three, as an index of the cardiac force. Suppose, however, the pressure readings were 140 over 80, this would give a pulse pressure of 60 or, 60 into 140, which is but 2⅓. A patient with such a pulse-pressure has poor cardiac muscle and when placed in the Trendelenburg posture, which always causes a certain amount of cyanosis and raises the pressure, places a tax on the heart muscle, which it is frequently incompetent to stand, and after the patient is lowered to the horizontal posture, decompensation occurs.

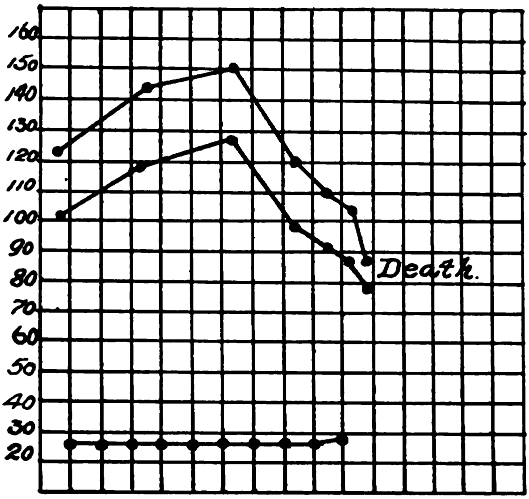

Fig. 2.—Readings in a case of myocarditis with poor renal function taken at rest, after moderate and active exercise, operation, six hours later and before death.

The value of such a test is at once apparent in estimating the quality of the cardiac muscle, especially in those women who have been ill for a long time, with infective disease.

We next make a preoperative estimation of the sulpholphenolphthalein output of each patient, to estimate the kidney function. We have found, that averaging the normal pulse pressure at 35 mm. the "phthalein" output for the two hours, in the normal case averages about 60 per cent.

Where the pulse pressure is high, say, 60 or 70 mm., the phthalein reading will be either high or low, depending on the state of the kidney structures. When the phthalein reading is low, the pulse-pressure has to be relatively high to compensate for the diminished renal function. On the other hand, when the phthalein reading is low, for example but 20 or 30 per cent. in two hours, and the pulse-pressure is also low, or if it is high and the relation of the pulse-pressure to the systolic pressure is disturbed in its normal ratio-bearing a relation of 1 to 2, instead of 1 to 3, or better, the patient has proven to be a poor operative risk, as the condition of the cardiac muscle is always questionable. These patients have invariably given us trouble in their postopervatie course.

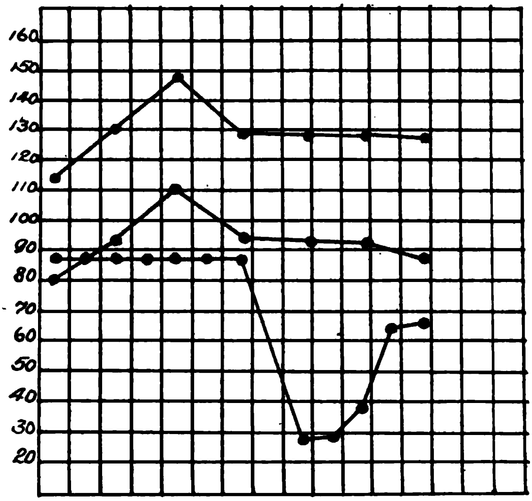

FIG. 3.—Readings in a case of nephrectomy for large cystic kidney taken at rest, after moderate and active exercise, operation, then six, twenty-four and seventy-two hours later.

Our only fatal case of postoperative cardiac dilatation showed a preoperative pulse pressure of 24, and a phthalein output of only 29 per cent. Under ether stimulation and the Trendelenburg posture, the pulse pressure was maintained throughout the entire operation at 30 mm., but promptly, on her return to bed and after the stimulating effect of the ether had worn off, the pulse pressure dropped to 20 mm. and resisted all known methods to raise it. The patient died, five and one-half hours after coming from the operating room. This experience led us to make a further study of the effect of ether, the Trendelenburg posture and prolonged operation on renal function, as shown by the phenolsulphophthalein output.

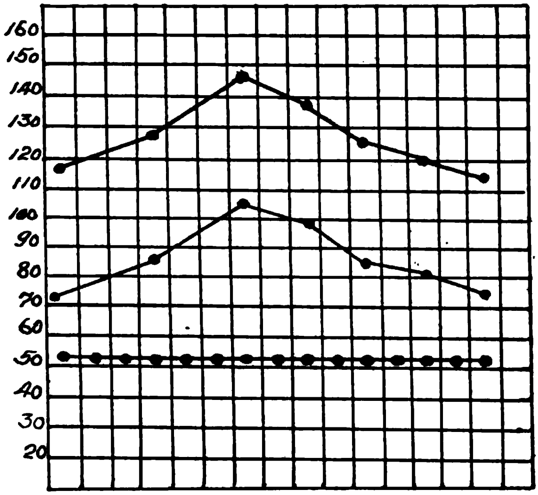

FIG. 4.—Showing readings at same intervals, with no change in this case of the "phthalein" output, although the urine secretion fell from 40 to 21 ounces in twenty-four hours.

Our routine has been, for several years, to have the anesthetist watch the pulse pressure and report the same to the operator at ten-minute intervals during the operation, and to take the systolic and diastolic pressures immediately at the close of every operation, while the patient is still under ether stimulation, again in one hour, in six hours, and twenty-four hours after the operation is completed. In addition to this, a record of the pulse rate is made and charted every fifteen minutes for the first six hours following the operation.

In shock or suspected hemorrhage the systolic and diastolic pressures are taken every hour until reaction has taken place.

It is also our routine to make a complete blood count and hemoglobin estimation immediately on the return of the patient from the operating room.

This gives us a control for comparison with subsequent pressures, and counts, should complications occur in the postoperative course. No step in our routine has been of more clinical value than this detail, for, with accurate knowledge of the blood state, in conjunction with blood pressure readings, we have been able to differentiate between shock, hemorrhage and postoperative cardiac dilatation.

Normally, after an abdominal section of fifty to eighty minutes, with ether anesthesia, the induction being made with nitrous oxide and preliminary morphine and atropine, there is a rise of from five to fifteen points in the hemoglobin reading as taken from peripheral blood, in 80 per cent. of the cases studied, which rise was directly proportionate to the length of anesthesia and the amount of the anesthesia used. In 12 per cent. the hemoglobin reading remained unchanged. In one-half of these cases, however, the length of the narcosis was considerably below the average of the series. The remaining 8 per cent. showed a drop in the reading. These were cases of hysterectomy for chronic pelvic inflammation, in which there was considerable blood loss during the operation. Red cell counts were taken in every instance, these remained fairly constant with a variation ranging from one hundred thousand to two hundred thousand cells, which we feel is entirely within the range of error. In from six to forty-eight hours the hemoglobin reading had practically returned to what it was previous to the operation.

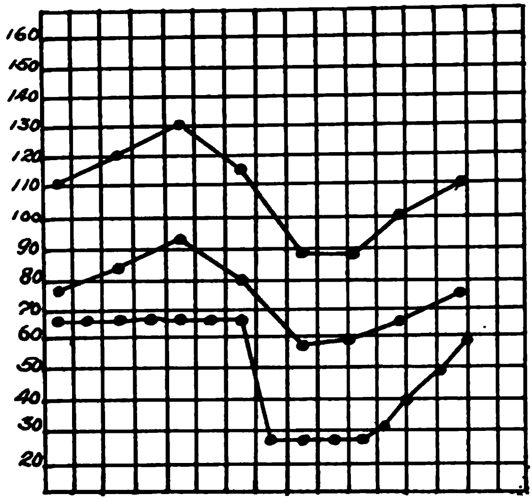

FIG. 5.—Readings at same intervals in a case of myomectomy with considerable hemorrhage during operation. Morphine, gr. ½, used in place of ether for at least half of operation.

Routine blood pressure, taken one hour after the operation, after the effect of the ether stimulation has passed off, showed an average systolic drop 14.2 mm. of mercury; while the diastolic reading showed an average fall of 7 mm. In the majority of cases the blood pressure returned to the preoperative readings in from four to twenty-four hours following the operation. In those cases which were distinctly shocked, the pressure returned to normal on the second or third day postoperative.

There was a constant and rapid rise in the leukocyte count which was first noted one hour after operation, and increased for six to twelve hours. The average rise by the end of the twelfth hour was 12,000 cells. The differential count showed a relative increase of the polymorphonuclear cells, their average rise being 14 per cent. The lymphocytes were accordingly reduced, while the transitional cells remained unchanged.

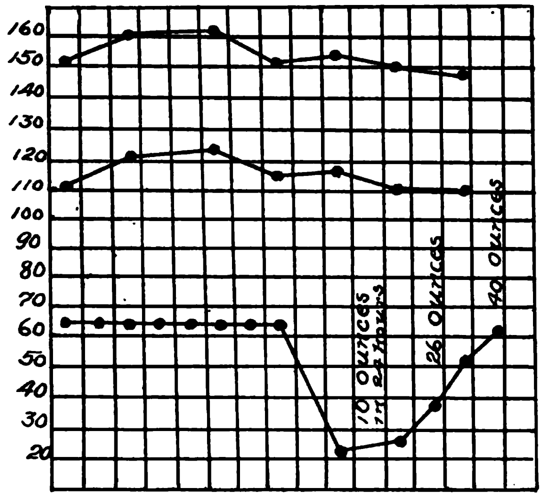

FIG. 6.—Readings in a case of total hysterectomy for subcortical myoma. Light ether anesthesia with morphine, gr. ⅙, during final portion of operation.

Six hours after operation the first "phthalein" estimation is made of the kidney function. A catheter is left in place for two hours and the readings made from the collected urine. So far in our work one interesting observation has been noted, that, notwithstanding the diminished urinary output, which always follows the administration of ether, and averages about 18 ounces in the first twenty-four hours, there is only a negligible change, usually not over 10 per cent., in the "phthalein" eliminated, provided the pulse pressure has remained normal.

But three exceptions to this constant observation have been noted —one, a nephrectomy, for a large cystic kidney, where the immediate effect of removal of the kidney was to reduce the "phthalein" from 85 per cent. preoperative, to 29 per cent. postoperative—yet, within thirty hours the output had increased to 65 per cent. Another exception was a myomectomy, in which there was considerable blood loss during the operation, with a consequent fall in pulse pressure. A half a grain or morphine was used to maintain the anesthesia during the last half of the operation, while the administration of ether was suspended.

The operation was followed by severe shock, the blood pressure fell to 78 over 55 mm. and remained so for several hours. The urinary output in the first twenty-four hours was but 4 ounces, and the phthalein elimination only 20 per cent. It was seventy-two hours before the urinary output and the kidney function approached the preoperative records. This case serves as a good illustration of the relation of pulse pressure to kidney function.

A third case which shows a marked discrepancy between preoperative and postoperative readings, was that of a woman with a large subvesical myoma, who was subjected to a total hysterectomy. Her hemoglobin on admission was only 40 per cent. The systolic pressure 150 over a diastolic of 110 mm. This patient showed a preoperative functional phthalein of 65 per cent. after twenty-four hours of preoperative rest in bed. She had a light ether-oxygen anesthesia of nearly an hour, supplemented by half a grain of morphine during the operation; this morphine was given after the anesthesia was completely established. She left the operating table with a pulse of 80, of good quality, and a pressure of 155 over 115 mm. Her phthalein output, at the end of six hours was 20 per cent. and only 10 ounces of urine was secreted in the first twenty-four hours. This increased to 26 ounces in the second twenty-four hours as did the phthalein, which rose to 40 per cent. These two cases suggest to us that while morphine definitely minimizes the shock, and may be used to advantage when the patient is fully anesthetized to continue and complete the operation without the further administration of ether, it has the effect of diminishing the urinary output in the first few hours after operation, even when there is no disturbance in the pulse pressure.

In the second case which I have recorded, the low pressures may have had a direct bearing on the kidney output, but in the last, the pulse pressure remained constant, and therefore cannot be credited with inhibiting the kidney function, nor, in this case, was there any blood loss or shock, hence, we feel it is fair to conclude that the diminished output was directly due to morphine.

Clinically, certain facts stand out in the differentiation between shock and hemorrhage: (1) In hemorrhage the pulse rate is always progressively increased; (2) the pulse pressure gradually decreases, the systolic gradually approaching nearer and nearer to the diastolic; (3) the leukocyte count in hemorrhage is always increased, reaching 18,000 to 20,000. The striking similarity in the clinical manifestations of these two conditions is due to the fact that in hemorrhage, the blood is permanently lost from the vessels, while in shock, it is accumulated in the large venous trunks of the splanchnic plexus, and therefore, is of as little use in maintaining the blood pressure as if the whole volume of blood was actually outside of the body. This accounts for the reduction in systolic pressure in both conditions, but in shock the pulse rate does not progressively increase, neither does the pulse pressure decrease and as the blood is within the vessels and not poured out from them, the leukocyte count remains the same or decreases.

From this study, which now includes more than 350 consecutive abdominal cases, we feel justified in drawing the following conclusions:

First.—That the pulse pressure is the test of the muscular strength of the individual woman's heart, when endocardial lesions can be excluded. The index of the muscle competency is shown by the relation of the pulse pressure to the systolic pressure which should be 1 to 3 or more, if the compensation is adequate.

Second.—That the efficiency of the kidney function is directly dependent upon the cardiac force of the individual, provided the kidney structures are normal or approximate the normal.

Third.—That ether anesthesia of an hour does not disturb the relation of the pulse pressure to kidney function, unless the operation is accompanied by considerable loss of blood.

Fourth.—That when the pre-operative kidney function is low, the pulse pressure must be relatively high, to compensate for the deficiency, for it does no good to add saline by skin or bowel, or by infusion, unless there is sufficient cardiac strength to take it up and carry the column along.

Fifth.—When both the pulse pressure and the "phthalein" output are low, or the relation of the pulse pressure to the systolic pressure is as 1 to 2, the operative prognosis should be guarded.

Sixth.—That morphine, in large doses, used during operation, seems to help in diminishing the shock, but has a definite effect in diminishing the kidney output.

Seventh.—In the majority of cases there is a moderate fall in both the systolic and diastolic blood pressure, following ether anesthesia, the inhalation of oxygen after the withdrawal of the ether diminishes this fall, but its effect is only transcient.

Eighth.—In cases of shock, especially where there has been much blood lost during the operation, the fall in systolic pressure is greater than after a long operation without blood loss.

Ninth.—The pulse pressure is a better index of hemorrhage or cardiac failure than the systolic pressure, and finally, there is a constant rise in the leukocyte count in the presence of actual hemorrhage, while the leukocytes fall in shock.

287 CLINTON AVENUE.

OBSTETRIC SURGERY.*

BY

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THE obstetrician, in his efforts to save life and preserve health, is contending against some of the most important enemies which confront the surgeon. Hemorrhage, shock and infection equally threaten the surgeon and obstetrician. Parturition so frequently causes wounds that the repair of such injuries introduces an element of surgical closure. It is natural that much of obstetrics should be obstetric surgery.

As greater change has taken place in obstetrics in recent years than in any other branch of medicine, so obstetric surgery has widened its scope from a few emergency operations to several well-defined and important surgical procedures. It would be superfluous to give in detail the many surgical procedures which comprise the greater part of obstetric practice, but may I bring to your attention the surgical aspects of some obstetric procedures.

The immediate closure of lacerations of the genital tract occurring during labor has long been considered an obstetric procedure but that this may successfully be done, the obstetrician must do more than simply bring together an open tear in the perineum. If his

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*Read at the annual meeting of the Medical Society of the State of New York, Syracuse, May 8, 1919.

patient is to make a complete recovery the cervix, the anterior and posterior segments of the pelvic floor and the perineum must all be examined and if torn be repaired. This requires a knowledge of the anatomy of the parts as thorough as that which makes possible the successful work of a surgeon in operating for hernia.

The most frequent of obstetric operations is delivery by forceps. Yet the introduction of any foreign body within the uterus, even though it pass no further than the cervix or though forceps be only used in the vagina, exposes a patient to the risk of infection, while anesthesia and manipulation give rise to the danger of relaxation of the uterus and hemorrhage. In many cases the forceps must be used when considerable laceration is unavoidable and hence the termination of labor by this means leaves the patient more or less injured. No forceps operation can be thoroughly done which is not conducted on surgical principles and which does not take cognizance of the possible occurrence of hemorrhage and septic infection, and take measures to prevent them.

To bring this to a concrete example, indications arise which justify the delivery of a child by forceps, when the head is upon the pelvic floor but has not rotated, and when a considerable portion of the cervix is still over the head, under these conditions forceps must be introduced within the cervix, the tips of the blades extending into the lower segment. The head must be drawn through the cervix and rotated upon the pelvic floor and then delivered and invasion of the uterus and laceration of the genital tract are inevitable. Or the case may not be suitable for forceps and the physician must deliver by introducing the hand and arm within the uterus and by the performance of version followed by extraction, the same risk of infection and laceration is present. Shall the obstetrician content himself under these circumstances with extracting the child and closure of open lacerations of the perineum, or shall he investigate the condition of the birth canal and close all lacerations and take additional precaution against hemorrhage and infection? The development of obstetric surgery at the present day indicates that the latter is his duty. How may this be done? Under competent anesthesia delivery is accomplished; following this a reasonable time is given for the closing of the sinuses in the uterine wall and then the placenta is expressed by Credé's method or removed manually. The patient is kept under the anesthetic following the removal of the placenta, membranes, cord and blood clots, the uterus is irrigated with 1 per cent. lysol or weak iodine solution or salt solution, it is then firmly packed with 10 per cent. iodoform gauze. This is done not only as a precaution against septic infection but to secure prompt and lasting uterine contraction and thorough drainage of the lochia. The cervix is then drawn down to the vulva and examined and cervical lacerations are closed; lacerations of the posterior segment of the pelvic floor are then repaired and similar attention is paid to tears in the anterior segment of the pelvic floor, the closure of the perineum may follow that of the posterior segment of the pelvic floor or be done last of all. An artificial delivery so conducted is based upon surgical principles, and aims to leave the patient sound anatomically and free from infection and hemorrhage.

As the surgeon would use his own judgment in selecting the time for repair of bruised and lacerated tissues, so the obstetrician may elect immediate closure or delay a day or two until swollen tissues have become more nearly normal. The principle is the same to thoroughly examine and repair injuries to the genital tract following artificial delivery in accordance with surgical principles.

The indications for delivery by abdominal and vaginal section have been so greatly extended in recent years that a new field in experience and observation is opening. The classic indication for abdominal delivery was contracted pelvis of high degree, but this problem solved, the obstetrician is now engaged in the study of other indications which are more recently recognized and hence more interesting.

We recognize the fact that the fetal head during labor may become so wedged in the pelvic brim by the presentation of a parietal bone that it cannot be drawn through the pelvis without sacrificing the child, so when the chin rotates posteriorly and in some brow presentations, with transverse position in shoulder presentation, fetal impaction with threatened rupture of the uterus, may make vaginal delivery in the highest degree unsafe. If the fetus be living and in good condition, that fact in addition to those described, would give a clear indication for abdominal delivery. But in some cases when the fetus is dead, its vicious position is accompanied by septic infection and then the risk to the mother of vaginal manipulation and delivery is greatly increased; in desperate cases it may be necessary to sacrifice the uterus to save her life but this can only be done by abdominal section.

We recognize ectopic gestation as a clear indication in the majority of cases, for abdominal section, although there may be a choice as to the time for operation. The essential of an ectopic gestation is the attachment of the impregnated ovum outside its usual and safe lodging, the body of the uterus. When the impregnated ovum attaches itself to the lower uterine segment, and especially when it descends so low that it covers wholly or partially the internal os, we are dealing with a variety of ectopic gestation quite as dangerous as tubal pregnancy. In placenta previa the fact that hemorrhage is apparent through the escape of blood from the vagina, is a safeguard to the mother as a signal of danger, on the other hand the ovum is attached to the upper extremity of the vagina abounding with bacteria. Vaginal manipulation in placenta previa is very apt to be followed by septic infection. The fact that the impregnated ovum is imprisoned within the abdomen or pelvis in extrauterine pregnancy shields the mother from this danger before operation is performed.

Shall placenta previa be treated as ectopic gestation? Obviously in the early months of pregnancy a very low attachment of the impregnated ovum requires the immediate emptying of the uterus with precaution against hemorrhage and infection. Where viability and life of the child cannot be ignored and if the placenta is lateral, marginal or partial, mother and child may receive adequate care if the membranes are ruptured and the uterus made to press the presenting fetal part firmly against the placenta. If this pressure be maintained during labor and postpartum hemorrhage be anticipated and prevented after labor, mother and child should do well with these simple precautions. But in cases where the placenta is central and completely over the internal os or where the greater portion of it occludes the internal os, the conditions are different. For some time we did not clearly understand the comparatively high septic mortality of these varieties of placenta previa, but it was observed that infection most often developed in those patients who had much vaginal manipulation and especially those in whom the vagina had been tamponed with gauze. The greater the vaginal manipulation the greater the risk of sepsis, and this has led in many clinics, to the strict limitation of vaginal examination and entire avoidance of the use of gauze packing in the vagina, in these cases. To-day the greatest success in dealing with central placenta previa is obtained by prompt delivery by abdominal section so soon after the first hemorrhage as possible. In unusual cases of partial placenta previa the same reasoning prevails. It must always be remembered that in placenta previa postpartum hemorrhage is a constant complication and that measures must be taken for its prevention or its control.

It is quite true that placenta previa central or largely so, may be managed by other methods than abdominal section if the life of the child be disregarded; version and the bringing down of a leg and breech, awaiting the development of spontaneous labor give good results for the mother at the expense of the child. The use of a dilating bag placed against the placenta or carried through the placental substance against the presenting part, in skilful hands, gives good results for the mother and fairly good results for the child, but neither of these require the prompt performance under proper conditions of abdominal delivery so soon as the diagnosis of the condition has been made.

In accidental separation of the normally implanted placenta we have a condition analogous to that of ruptured tubal gestation, here abdominal delivery affords the *only* prompt and secure method of rescuing the mother from insidious danger. While there may be difference of opinion concerning the treatment of placenta previa, the majority of obstetricians agree that accidental separation of the normally implanted placenta in the later months of pregnancy is best treated by section.

In complicated labor under what conditions to-day are we justified in embryotomy? This question is especially pertinent in view of the danger that delivery by abdominal section be performed for insufficient indication. Obviously the presence of a dead fetus in a genital tract too small to permit its spontaneous delivery, but large enough to warrant its removal if dismembered calls for embryotomy. A question difficult to decide arises when we are confronted with a patient whose child is dead or dying and in whom circumstances are such that vaginal delivery would be very difficult and dangerous. If septic infection complicates this situation, the position is still more difficult. The solution rests upon several facts, if all the circumstances and conditions point to septic infection as already present, has the woman living children, does she and her husband consent to sterilization? Under these conditions delivery by abdominal section followed by the removal of the body of the uterus and Fallopian tubes and fastening of the stump in the lower end of the abdominal incision, gives the best results. If the woman be primipara and can safely be delivered by embryotomy this should be done with the hope that subsequent pregnancies may be successful. If the woman be multipara and the conditions are favorable for vaginal delivery, labor may be terminated by embryotomy.

We must recognize the fact that conditions exist in some patients where the anatomical elements necessary for successful spontaneous labor are present, but physiological elements requisite for successful labor are absent. In many of these cases a pathological condition of the uterine muscle is at the root of the matter, and this can only be inferred from previous examinations and cannot be demonstrated without actual intra-abdominal examination. There may also be cases where we have no reason to suspect the pathological condition of the uterine muscle but where the woman, although her pelvis be large enough, may be so ill developed in the uterus, and the muscular and nervous supply of the uterus be so deficient that successful vaginal delivery may become impossible. In these cases the patient goes over the normal limit of pregnancy, engagement and descent do not develop, labor pains are few and weak and gradually cease and nature fails to establish the physiological function of parturition. In these cases, after a thorough study of the patient and after every effort has been made to put her in good physiological condition and bring about the development of labor, elective Cesarean section is very successful.

Shall eclampsia be treated by section, abdominal or vaginal? The retention of the term eclampsia in its common significance is unfortunate, it was originally applied to the convulsion of infants, and it means convulsion only. The toxemia of pregnancy early and late, conveys a clear and more accurate idea. From our experience we have long since abandoned abdominal section in toxic patients suffering from convulsions with one exception; the vigorous primipara with unshortened and undilated cervix having had few convulsions and who does not respond to eliminative treatment, here prompt delivery by abdominal section may save the life of mother and child. This would also be true of a multipara whose cervix was so thickened by scar tissue that delivery by vaginal section might be indicated, but these cases are comparatively rare. There is however a distinct field for elective abdominal section in the toxemia of pregnancy. When hygienic measures fail in the later months of gestation and toxemia steadily increases and there is no sign of labor, and when active treatment of toxemia fails to check its progress although the patient has no convulsion, prompt delivery by section is indicated. The induction of labor in such a case subjects the patient to prolonged irritation and is very apt to induce convulsions. The danger to the child in such an induced labor is not inconsiderable.

The discussion of the surgery of labor would not be complete without reference to obstetric operations for widening the pelvis. As Lorenz demonstrated a bloodless method of operating upon the hip-joint, so Mercurio taught obstetricians the bloodless method of enlarging the pelvis by using the posture of the patient which commonly goes under the name of Walcher's position, by this the weight of the lower extremities is made to rotate asunder 1 to 2½ inches of the pubes by rotation at the sacroiliac joints, a gain of ½ to 1 cm. in several important diameters of the pelvis is the result. Symphyseotomy has long since been discarded and pubiotomy in the majority of American Clinics is rarely performed. The dangers of lacerations of the soft parts against the cut ends of the bone and subsequent hemorrhage and infection are sufficiently great to limit the use of this operation.

In the surgery of pregnancy we have already mentioned complications relating to the attachment of the impregnated ovum, ectopic gestation, with the ovum within the pelvis and abdomen requires abdominal section, and calls for no further discussion, but the surgery of the digestive tract in pregnancy is a modern field of great interest in obstetrics. Appendicitis complicating pregnancy is not an uncommon occurrence and a careful study of considerable numbers of cases of colicystitis in child-bearing women show that this condition frequently arises during pregnancy. Recent studies in infection in pregnancy by the bacillus coli communis show that this process may manifest itself in the appendix or gall-bladder during pregnancy, and also in the puerperal state, and familiar examples of its activity are seen when this germ invades the pelvis of the kidney and the pyelitis of pregnancy is now well recognized.

Obstetricians have observed that appendicitis is dangerous in pregnancy in proportion as it occurs near to the termination of gestation, this probably arises from the mechanical pressure of the large uterus and the comparative difficulty of operating during the last months of pregnancy. In a pregnant woman having an infected appendix it should be removed so soon as the diagnosis is made, the earlier in pregnancy the better. Whether an infected gall-bladder should be drained during pregnancy or removed is not yet clearly established but certainly during pregnancy or the puerperal state, the surgical treatment of colycystitis often indicated and successful. The writer may illustrate this phase of the subject by calling attention to a case in which a young woman in her first pregnancy, was profoundly toxic. Rest in bed, hygienic and medical treatment was unavailing, although pregnancy had reached its natural limit there was no sign of labor. There was well-marked tenderness over the appendix and gall-bladder. This patient was delivered by elective abdominal section followed by removal of the appendix and drainage of the gall-bladder. Mother and child made a good recovery.

In the pyelitis of pregnancy many cases are successfully managed by medicinal or local treatment, but in some cases drainage of the kidney by incision is, in the experience of the writer, followed by good results. In none of these patients has pregnancy been interrupted and a good recovery has followed the operation.

In rupture of the uterus and in pathological conditions in the pelvis which render vaginal delivery impossible or unsafe abdominal section is often indicated. Experience shows that while it may be possible to deliver the child through the vagina when an ovarian tumor complicates the pregnancy, it is far safer to follow the delivery of the child by the opening of the abdomen and immediately removing the tumor: so in rupture of the uterus, if the conditions possibly permit, section is the safest procedure.

To what has been said the surgeon will immediately reply that the obstetrician should limit himself to the use of the obstetric forceps and closure of the perineum. The gynecologist will join him in this dictum and both will asset that when the abdomen has to be invaded in pregnancy or labor, that the obstetrician should summon them for this purpose, but the complications of obstetrics frequently develop so suddenly and under such circumstances that it may be difficult to summon aid, possibly from a distance, and the important part of a surgical procedure is not its performance but an accurate diagnosis of the condition and a large experience which leads to a correct judgment as to the necessity for the operation. Here the surgeon and gynecologist are not competent to properly decide upon obstetric procedures, and hence the life of the patient demands that the obstetrician be competent to deal with complications of pregnancy and parturition. The immediate repair of the cervix was at first hotly contested as a procedure likely to lessen the operative work of several departments of surgery, but in the majority of obstetrical clinics to-day a considerable laceration of the cervix is immediately closed.

At this point that important part of the medical profession, the general practitioner, may ask in what capacity he enters the field of obstetric surgery. The general practitioner of medicine does not always recognize that he has within his grasp a most important, attractive and lucrative specialty in medical science, that of diagnosis. No man should undertake obstetric cases who cannot diagnosticate the presence or absence of engagement of the presenting part. and upon this diagnosis often depends the life of mother and child.

Much obstetric practice is done by the general practitioner to retain the medical work of the family and one cannot expect the most efficient service under such conditions.

The multiplications of hospitals, the increase in maternity wards, better clinical training in obstetrics, good roads and motor transport, all make it possible in the greater part of our country to send complicated cases of confinement or pregnancy promptly to hospitals where they may receive proper attention and competent obstetricians should be present on the staff of each hospital however small. Complicated cases of pregnancy and labor should be considered as critical as appendicitis, ruptured ectopic pregnancy, gall-stones or strangulated hernia. When this condition prevails the maternal mortality or parturition in the United States will grow less and this country will no longer occupy the unenviable position of fourteenth in the list of civilized Nations in this regard.

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THE DISTRIBUTION OF ADENOMYOMATA CONTAINING UTERINE MUCOSA.*

BY

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(With one illustration.)

On this occasion it is not my intention to delve deeply into the pathology of adenomyomata or to discuss at length their causation, but merely to give a bird's eye picture of this characteristic tumor and to describe briefly its distribution and the clinical picture noted in the various localities in which it occurs.

The adenomyomata under consideration consist of a matrix of non-striped muscle and fibrous tissue. Sometimes the fibrous tissue predominates, whereas in other tumors the muscular elements are more abundant. Scattered throughout this matrix or ground-work are isolated glands or groups of glands sometimes lying in direct contact with the muscle but usually in a characteristic stroma. The glands resemble in every particular those found in the mucosa lining the body of the uterus. In short, the adenomyoma resembles a diffuse myoma with islands of uterine mucosa scattered throughout it.

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*Read before the annual meeting of the New York State Medical Society at Syracuse, May 7, 1919, as an introduction to a lantern demonstration.

ADENOMYOMATA OF THE BODY OF THE UTERUS.

These may be limited to the anterior or posterior walls of the uterus or form a mantle or zone just outside the uterine mucosa. When the uterus is cut open, it is noted that the anterior or posterior wall or both are thickened. This increase in thickness is due to a coarse striated condition of the muscle directly beneath the uterine mucosa. Where the uterine walls are especially thick the diffuse myomatous growth may be several centimeters in thickness. Scattered throughout the diffuse growth one often notes small cyst-like spaces filled with chocolate-colored contents and not infrequently one can with a loupe here and there detect uterine mucosa penetrating into the diffuse growth. Occasionally a cyst-like space, 1 cm. or more in diameter, may be found in the thickened uterine wall. Such a space will be lined with a velvety membrane 1 mm. thick and the cavity will be found filled with the characteristic chocolate-colored contents—old menstrual blood.

The line of demarcation between the normal outer uterine muscular wall and the diffuse myomatous growth just beneath the mucosa is invariably sharply defined, but the two are nevertheless so closely blended that it would be absolutely impossible to separate them. Occasionally such a uterus will contain one or more small discrete myomata.

The histological picture in a typical case is very characteristic: the uterine mucosa is often of the normal thickness and looks perfectly natural, but as we approach the underlying diffuse myomatous tissue, the mucosa is seen to penetrate it in all directions, sometimes as an individual gland, but often large areas of mucosa are seen extending into the depth. In favorable sections one can follow a prolongation of the mucosa halfway through the uterus. Where the diffuse myomatous growth ends, the outward extension of the glands also ends.

In the course of time portions of the diffuse adenomyoma may project into the uterine cavity and be expelled through the cervix as submucous adenomyomata. In other instances a portion of the growth is forced to the outer or peritoneal surface, forming a subperitoneal adenomyoma. Such a myoma is prone to become cystic and the cyst cavity or cavities will be filled with chocolate-colored contents.

Symptomatology.—It is not difficult to figure out to what symptoms an adenomyoma of the uterus will usually give rise. In the first place, the mucosa lining the uterine cavity is perfectly normal, hence, as a rule, we shall have no intermenstrual discharge. With the advent of the menstrual period, however, the patient will not only lose her normal quota of blood, but this will be greatly increased by the flow coming from the large areas of mucosa which are scattered throughout the diffuse myomatous growth.

There will, as a rule, be a great deal of pain in the uterus due primarily to the swelling of the mucosa which is scattered throughout the uterine walls. The small and medium-sized cystic spaces filled with chocolate-colored fluid are due to the accumulation of old menstrual blood in areas where the continuity of the mucosa with the uterine cavity has been interrupted. Such areas also undoubtedly add to the feeling of distention and discomfort at the period.

On bimanual examination we find a uterus that may be normal in size and perfectly smooth, or, on the other hand, it may be two or more times its normal size and slightly nodular. The introduction of a uterine sound usually shows a normal cavity and on currettage normal mucosa is invariably found.

From the clinical findings one can often make a fairly accurate diagnosis of adenomyoma.

Removal of such a uterus is usually clearly indicated. Frequently this proves rather difficult on account of the tendency for such an organ to become densely adherent to surrounding structures.

ADENOMYOMA OF THE UTERINE HORN.

In addition to the diffuse adenomyoma of the uterus one finds another variety of adenomyomata in this organ. These are the small adenomyomatous nodules noted in one or both uterine horns. They vary from a few millimeters to about 2 cm. in size and are often associated with an old inflammatory process in the tubes. These growths usually contain many isolated glands embedded in nonstriped muscle and inflammatory tissue. The glands usually lie in direct contact with the muscle and are devoid of the characteristic stroma. Adenomyoma of the uterine horn can hardly be looked upon as a distinct clinical entity but rather, I think, as part of the end-results of a mild inflammatory process.

ADENOMYOMA OF THE ROUND LIGAMENT.

In 1896 it fell to my lot to record the first growth of this character. Since then quite a number have been noted. Somewhere along the course of the round ligament, usually near the external ring, a nodule one or more centimeters in diameter is detected. On going carefully into the history it will be noted that this growth swells perceptibly at the period. One patient was sent to me on the assumption that a hernia existed, but even in this case in the history it was recorded that the swelling was more painful and more prominent at the period.

With the gradual increase in size of the nodule it may become intimately blended with the fascia. In my second case the diagnosis was easily confirmed at operation, even before any microscopical examination had been made. The surrounding fascia had imbibed a large amount of golden yellow pigment—the remnant of old menstrual blood.

Some of these growths can be removed very readily, others, however, in time may become so intimately blended with the surrounding structures that they must be literally cut away. On histological examination they are found to be made up of nonstriped muscle, fibrous tissue and the characteristic uterine glands. Strands of fibrous tissue and nonstriped muscle spread out into the surrounding adipose tissue.

ADENOMYOMA OF THE UTERO-OVARIAN LIGAMENT.

These are naturally of little clinical significance and will only be recognized in the laboratory. I have reported one case. A multinodular myomatous uterus was removed and springing from the utero-ovarian ligament was a myoma several centimeters in diameter. In the center of this were islands of typical uterine mucosa.

ADENOMYOMA OF THE UTEROSACRAL LIGAMENT.

I know of only one [1]case of this character. My colleague, Dr. W. W. Russell, removed a pea-sized nodule from the uterosacral ligament. On histological examination it presented the typical adenomyomatous picture. Since then I have seen a cyst 1.5, cm. in diameter, apparently springing from the right uterosacral ligament. It contained yellowish brown, putty-like material. It may belong to this group but of this I cannot speak with certainty, as the histological picture was not very definite.

ADENOMYOMA OF THE RECTOVAGINAL SEPTUM.

I wish to lay unusual emphasis on this group of cases. Many of you have undoubtedly seen them but may not have recognized them. They are of unusual importance and, if overlooked, will in time cause the patient to become a chronic invalid, and in some instances will undoubtedly lead to her death.

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[1] Since reading this paper I have had another case. This patient N. E. T. was operated upon at the Church Home and Infirmary on May 20, 1919. In the left uterosacral ligament a short distance from the uterus was an adenomyoma about 1 cm. in diameter. This was removed. Histologically it presented the usual picture.

In 1913, Dr. D. S. D. Jessup, one of your members, knowing my interest in adenomyomata, sent me specimens of two tumors of this class. The mail on the following morning brought me the "Proceedings of the Royal Society" with Cuthbert Lockyer's splendid article on "Adenomyoma of the Rectovaginal Septum." These two communications set me thinking and I at once felt sure that two of my cases undoubtedly belonged in this category, although the histological examination had given no inkling of such a condition. I had many more sections made and was finally rewarded by finding in each case the typical picture in other portions of the specimen. Since then I have been on the look out for this condition and have had in all fifteen cases.

Adenomyoma of the rectovaginal septum usually starts just behind the cervix, and on bimanual examination one can feel in this region a small, somewhat movable nodule scarcely over a centimeter in diameter. The rectal mucosa at this time can be made to slide perfectly over the tumor.

As the growth increases in size, it spreads out laterally and at the same time becomes blended with the adjacent anterior rectal wall. Later it may invade the broad ligaments, encircling the ureters, or may envelop pelvic nerves. With the extension of the growth it may push down into the posterior vaginal vault forming definite and well formed vaginal polypi, and finally, it may break into the vagina.

The histological picture is typical of adenomyoma; even the vaginal polypi consist of nonstriped muscle and uterine mucosa covered over by vaginal mucosa. Where the growth has definitely broken through into the vagina, we have normal-appearing uterine mucosa lining portions of the vaginal vault.

The clinical picture in adenomyoma of the rectovaginal septum is typical. In the early stages the patient comes complaining of much pain just before and at the beginning of the period especially at the time of defecation. On bimanual examination a small nodule is felt directly behind the cervix.

When the process is more advanced, the growth may measure 2 or 3 cm. across and may bulge slightly into the rectum, while in some cases there is already marked thickening of the anterior rectal wall for a distance of several centimeters, and at the period there may be some rectal bleeding.

The growth sometimes encircles one or both ureters. At the period the tumor tissue naturally swells up and it may so constrict one or both ureters that there is a damming back on one or both kidneys with consequent pain in the renal region. In other cases when the pelvic nerves are caught in the growth, excruciating pelvic pain may be experienced as soon as the tumor becomes congested at the time of menstruation.

Occasionally, as the growth progresses, the polypoid condition in the vaginal vault directly behind the cervix becomes very prominent, and in those cases in which the growth breaks through the vaginal mucosa, there may be a menstrual flow from the vaginal vault even when a supravaginal hysterectomy has been done some years before for uterine myomata. Finally, if nothing is done, the pelvis may become so choked with the growth that the patient dies from the extreme loss of blood coupled with partial intestinal obstruction.

In the early stages of the growth this condition should be readily diagnosed. It cannot at this time be confused with any other pelvic lesion.

Treatment.—In the very early stages it may be possible to open up the vaginal vault just behind the cervix and remove the tumor. As a rule, however, it involves the posterior part of the cervix and cannot be shelled out.

Where the nodule is 1 cm. or more in diameter and is still freely movable, the abdomen should be opened, the ureters isolated and the uterus with a cuff of vaginal mucosa removed. If the vagina is cut completely across, one can then lift the uterus and vaginal cuff up and with more ease separate the adherent vaginal cuff from the rectum. Sometimes it will be necessary to remove a wedge of the adherent anterior rectal wall with the uterus.

In cases in which the growth is widespread, a preliminary permanent colostomy is imperative. Later the pelvic structures can be removed *en bloc.* The removal of an extensive adenomyoma of the rectovaginal septum is infinitely more difficult than a hysterectomy for carcinoma of the cervix.

When a hysterectomy has been done and a small portion of the growth has been left on the rectum, radium seems to have held the rectal growth in check.

UTERINE MUCOSA IN THE OVARY.

In 1898 my colleague, Dr. W. W. Russell, reported a case in which the ovary, although showing but little increase in size, contained large islands of uterine mucosa.

Within the last year Dr. Charles Norris of Philadelphia sent me a section of a relatively small ovary with islands of perfectly normal uterine mucosa scattered throughout it. Recently I examined a small cyst of the ovary filled with chocolate-colored contents and lined with uterine mucosa.

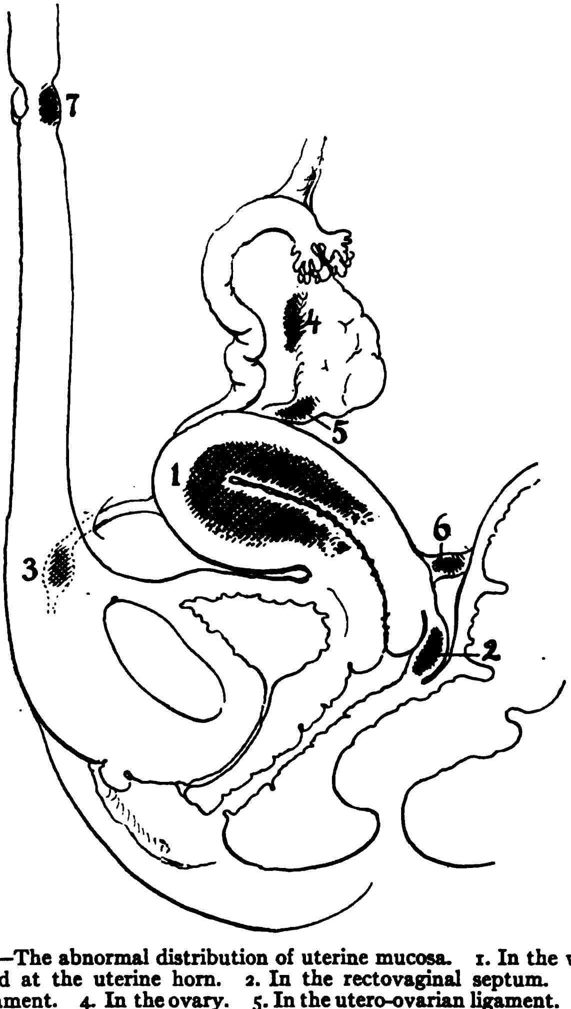

FIG. 1.—The abnormal distribution of uterine mucosa. 1. In the wall of the uterus and at the uterine horn. 2. In the rectovaginal septum. 3. In the round ligament. 4. In the ovary. 5. In the utero-ovarian ligament. 6. In the uterosacral ligament. 7. At the umbilicus. The uterine glands with their stroma are usually embedded in nonstriped muscle and fibrous tissue.

Dr. DeWitt B. Casler of our department is preparing for publication a unique case which has a definite bearing on this subject.

The patient, a trained nurse, thirty-eight years of age, had had excessive periods for one year. On examination the uterus was about three times the natural size. Hysterectomy was performed. The increase in the size of the uterus was due to a diffuse myomatous thickening, and scattered throughout this diffuse growth were quantities of stroma identical with that of the uterine mucosa. This stroma, however, contained no glands. The tumor resembled in every particular the picture of an ordinary adenomyoma of the uterus save for the fact that the glands were missing in the stroma.

This patient after her complete hysterectomy still continued to menstruate regularly through the vaginal vault. A vaginal examination about three and a half years after the hysterectomy showed that the ovary which had been left was perfectly normal in size. A little later it commenced to grow larger and when the abdomen was opened, four years after the hysterectomy, this ovary was as large as a grapefruit.

On histological examination great quantities of typical uterine mucosa were found scattered throughout the ovarian tumor thus clearly explaining why the patient had continued to menstruate without any uterus—the ovary contained all the essential elements, normal ova, and practically normal uterine mucosa, and the small tract left where the uterus had been removed supplied the necessary avenue along which the menstrual flow could escape.

In due time a sufficient number of such cases will undoubtedly be reported and then we shall be able to give a composite picture of both the clinical course and of the histological changes that occur in this most unusual group of cases.

ADENOMYOMA OF THE UMBILICUS.

From time to time a small thickening has been noted at the umbilicus in women during the child-bearing period. In some of these cases the tumor has increased in size perceptibly at the menstrual period, and in a few there has been a discharge of blood from the umbilicus at the period. Occasionally small bluish black cysts have been noted in the tumor.

Adenomyomata of the umbilicus are always small. On histological examination they are found covered over with normal skin. They consist of fibrous tissue and nonstriped muscle and scattered throughout this are islands of typical uterine mucosa. Where the history is characteristic, the diagnosis can be made with ease.

It is not necessary for me to discuss this subject in detail, as I have devoted an entire chapter to adenomyomata of this region in my book on the umbilicus.

Removal of the umbilicus is all that is essential in these cases.

SUMMARY.

From the foregoing we have seen that adenomyomata consisting of a matrix, of nonstriped muscle and fibrous tissue with typical uterine mucosa scattered throughout, are to be found in the uterus, round ligaments, utero-ovarian ligaments, uterosacral ligaments, rectovaginal septum and umbilicus, and that we occasionally find large quantities of normal uterine mucosa in the ovary.

Adenomyomata form one of the most interesting groups of tumors that we have to deal with in the female pelvis.

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PHYSIOLOGY AND PATHOLOGY OF THE ENDOMETRIUM.*

BY

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No study of the endometrium has been made in the past ten years which has not begun with a reference to the work of Hitschmann and Adler.

Most writers have prefaced their observations with the remark that little has been added to or taken away from this foundation.

The principal points to which attention has been directed are in noting that the histological pictures given of the various phases of the menstrual cycle are perhaps not as rigid as one would infer from the original article.

The most recent comprehensive study of the endometrium appears to be that of Schroeder(1) in which many additional features of the endometrium are discussed.

The most noticeable advance has certainly been in the correlation of the various stages of the corpus luteum with those of the uterine mucosa(2). According to Miller ovulation normally occurs on the nineteenth day of the menstrual cycle, nine days before the onset of menstruation. Frankl puts it one day earlier, while Schroeder makes it from fourteen to sixteen days after the onset of menstruation. The probabilities are that there is normally some variation in ovulation and that it may occur from the sixteenth to the nineteenth day after the onset of menstruation.

The end-result of these studies on the correlation of menstruation and corpus luteum formation is that a fresh corpus luteum is invariably present in the premenstrual stage of the endometrium, and that the condition of the mucosa can be accurately predicted from the corpus luteum and *vice versa.*

The use of the terms proliferative and secretory in place of interval and premenstrual has the advantage of expressing a physiological state and directing attention to the uterine secretions which have recently been the subject of study.

It has always been customary to date a menstrual cycle from the onset of hemorrhage. This is a practical method because it gives an obvious and definite starting point. But from an anatomical standpoint it is obvious that parts of two menstrual cycles are included in one by this method. A menstrual cycle begins with the renovation of the mucosa after menstruation, it proceeds through the growth, to the period of maturity when the mucosa gives forth its characteristic secretions. This lasts until retrogression, marked by the hemorrhage, and the end of the menstrual period is that of the end of hemorrhage whem a new mucosa is formed. In the case of pregnancy the secretory period is prolonged until delivery.

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*Read at the Annual Meeting of the Medical Society of the State of New York, Syracuse, May 8, 1919.

Ovulation is referred to the last appearing menstruation in the reckoning of pregnancy, which is a method of convenience, but the ovum in fact is a product of the succeeding menstrual cycle.

PHYSIOLOGY.

The specific function of the uterine mucosa is to prepare for the nidation of the ovum and this function is exercised periodically. The physiological secretions of the uterine glands must have a relation to nidation or to menstruation when that occurs.

The glands of the mucosa are of the simple tubular type; the cells are cuboidal or low columnar, an evidence of the simple form of mucous gland. During the secretory stage the nucleus is pressed to the base of the cell, there may be a distinct vacuole in the cytoplasm due to the discharge of mucin. The cytoplasm is not granular as in serous glands and the cell margin may be very irregular from rupture and discharge of the contents. Mucin is found in the lumen of the gland where it may be demonstrated by carmine or thionin stains.

Special staining is not necessary, however, as mucin may be recognized in broad sheets of a bluish tint in hematoxylineosin preparations. It is to be distinguished from serum which is granular and pinkish and from fibrin which stains in pink threads. This is the first and most easily demonstrable of the uterine glandular secretions and is of practical importance because it designates plainly the stage of the menstrual cycle which is present as accurately as the form and appearance of the glands. The uterine mucosa does not normally secrete at all times but the secretory stage is identical with the premenstrual, and marks the development of the corpus luteum.

Mucus is very scanty or absent in the proliferative stage and steadily increases in amount as the premenstruum advances.

It is abundant during pregnancy. The function is doubtless that of a lubricant. In dilated and cystic glands of the fundus and in mucocele of the uterus from stenosis of the os, it may be found inspissated in considerable quantity.

A second product of the uterine glands is stated by Ascheim, Driessen and Weyelin(3) to be glycogen. This is not properly a secretion, but is stored up by its growing cells as food reserve, in the form of granules, which may be demonstrated by Best's carmine stain. It is said to become very abundant in the premenstruum and in pregnancy and is formed simultaneously with the secretion of mucin. The authors cited regard glycogen as a valuable index of the secretory stage of the uterine mucosa.

In my own experience its demonstration is disappointing. I have not been able to convince myself that the red-staining bodies with Best's carmine were in fact glycogen since they do not disappear after hydrolysis with weak acids. At all events the presence of mucin is sufficient and characteristic evidence of the secretory stage which needs no confirmation.

Frankl and Aschner(4) and Halban Frankl(5) state that they have demonstrated a tryptic ferment in the secreting stage of the mucosa. Their first work was done upon plates of Loeffler's blood serum which they found were digested by extracts of the uterine mucosa, but since there were technical as well as theoretical faults in their experiments their second work was done with silk peptone. The uterine mucosa was ground and extracted in salt solution over night. The extract was then mixed with a solution of silk peptone and incubated at 37° C. for twenty-four hours, when crystals of tyrosin were demonstrable, this was regarded as proof of tryptic digestion. It does not appear from the descriptions that this work was carried on under bacteria free conditions. I have extracted and digested nine specimens of mucosa in the secreting stage in this manner and although tyrosin crystals were sometimes demonstrable this does not appear to be sufficient proof of the presence of trypsin.

When the extracts were filtered bacteria free no tyrosin appeared. It is necessary also to work with mucosa entirely free from blood on account of the antitryptic action of normal serum. In order to fully demonstrate the presence of a tryptic ferment, it would be necessary to have negative controls, that is to use inactivated (heated) extracts in comparison with the active ones. It is not stated in the articles referred to, whether such controls were used.

Frankl explains the desquamation of the mucosa during menstruation as the result of autolysis due to the tryptic ferment. He also states that the incoagulability of the menstrual blood is due to this ferment.

Why the tryptic ferment does not act during pregnancy is not explained by Frankl's theory. It is a misconception to regard menstrual blood as incoagulable. I have demonstrated the presence of active fibrin ferment in it and have shown that it is usually partly coagulated. There seems to be no basis for regarding the decidual reaction as due to a tryptic ferment.

While it is necessary to allude to the cause of menstruation it is beyond the scope of this article to fully discuss the function of the corpus luteum. In brief Frankl, as a result of destruction of the corpus luteum with the cautery, holds that its secretion causes menstruation. Halban on the contrary regards the lutein hormone as an inhibitor of menstruation. There are various difficulties in the acceptance of either hypothesis.

Meyer(7) and Schroeder(8) both see in the death of the unfertilized ovum a cessation of hormones controlling and protecting the corpus luteum. The retrogression of the corpus luteum causes the uterine mucosa to miss its functional stimulus and menstruation results. This theory would have more value if it were susceptible of experimental proof. There are certain objections to it as it stands, notably the fact that it necessitates the assumption of a fundamental difference between the mature ovum after follicular rupture and the ovum within the follicle, since during pregnancy ova are constantly dying in the ovary without disturbing the function of the corpus luteum. The theory again depends upon the assumption that the corpus luteum inhibits menstruation. This is not definitely established although perhaps the weight of evidence is in this direction.

It has generally been held that the corpus luteum controlled the early stages of pregnancy and that its removal during the first month would inevitably result in abortion. That this is not necessarily true has been proved in three cases at the Woman's Hospital where the removal of a corpus luteum verum during the second month has not interrupted the pregnancy. This is evidence against the inhibitory activity of the corpus luteum. Still in pregnancy all lutein tissue undergoes hypertrophy and the function if the corpus luteum verum may have been supplied by older bodies in these cases.

The relationships between the sexual gland hormones and the other accessory glands of interval secretion are too complex for any simple explanation of the menstrual function.

HISTOLOGY.

Variations occur both in size and form of the uterine glands and the relative proportion of the stroma. If the stroma is scanty the wall of the gland will buckle as it grows in length thus producing the serrated form characteristic of the premenstruum. This may be absent when the stroma is abundant so that it is not diagnostic of the secretory stage.

The gland may be dilated from accumulated secretion if its lumen is obstructed. Thus are produced variations in size and small cysts which are not to be looked upon as pathognomonic of any specific condition. The number of glands is absolutely dependent upon the number in the basal layer, and these do not increase with the growth of the functional layer. This controverts the old idea of glandular endometritis. Invaginations and glomeruli are certainly artefacts seen only in curettings and due to the contraction of the gland when the support of the stroma is withdrawn.

There are sometimes seen apparent mixtures of the glands in different phases of the menstrual cycle and these have been held to be diagnostic of uterine hemorrhage. These are in reality artefacts due to the curet, the basal layer being mixed with the functional. No mucosas from uteri removed by hysterectomy show mixtures of the proliferating and secretory stages. Leukocytes emigrate in the secretory stage and are most abundant during menstruation. Unless they are focal in minute abscesses they are not pathological.

Round cells and plasma cells are also seen in normal mucosas, but when they are abundant and in local area they denote inflammation. The uterine mucosa is composed of two layers, a narrow basal layer which is not cast off during menstruation and where the glands take origin and a functional zone which composes the greater portion. The functional zone shows in the secretory stage a suggestion of the two divisions characteristic of pregnancy, the inner spongy and the outer compact. So the stroma makes a decidual reaction in the secretory stage but its absence does not necessarily mean the absence of the premenstrual stage, since the reaction is not always conspicuous. Nor should the presence of areas of stroma without glands be regarded as pathological. Schroeder states that such appearances are artefacts due to curetting. I possess, however, specimens after hysterectomy which show broad areas of stroma without glands. These are in mucosas which show beginning atrophy or areas of atrophy adjacent to the glandless areas.

One of the most significant observations made in recent years on the physiology of the endometrium is that of Schroeder and others who state that there is complete destruction of the functional layer normally at menstruation. Schroeder bases his opinion upon eighty-one cases reported in the *Monatschrift f. Geburtshilfe und Gynaekologie* in 1914

The material from which such observations may be drawn must be carefully selected from hysterectomies upon patients having a normal menstrual history, who were operated upon directly after a menstrual period. It has not been my fortune to see many such endometria. The significance of the finding lies in the bearing it has upon pathological processes occurring in the mucosa. If there is complete destruction down to the basal layer every twenty-eight days it is plain that the mucosa can exhibit none of the characteristic alterations that denote chronic inflammation. Thus it cannot show cicatrization due to fibroblastic deposition of connective-tissue fibrils and elastic fibrils.

According to the complete desquamation during menstruation theory there can only be an acute or recurring endometritis, a chronic inflammation is only possible in the basal layer. No scar can occur in the functional layer, no connective-tissue production and induration can be demonstrable.

Also in the basalis the repair changes must be of a special type and produce no actual scar due to the extraordinary regenerative activity.

It is impossible to controvert the evidence supplied by the large number of cases collected by Schroeder, and yet the mucosas continually seen in patients who have been menstruating from one to several days gives no evidence of such complete destruction. The common finding is a persistence of the functional layer in the secretory stage. The superficial epithelium is often still demonstrable and there is no evidence of autolysis.

Many mucosas also give evidence of fibroblastic change in the stroma and slight but demonstrable cicatrization, showing that a chronic reaction is possible.

Robert Meyer states correctly that there are certainly some menstruations without complete desquamation.

Regeneration of the surface epithelium is said to occur on the third and fourth day after the cessation of menstruation. In the earliest postmenstrual mucosa which I have been able to observe, removed by hysterectomy on the third day, the superficial epithelium is present and covers a narrow zone of the functional layer which is still in the secreting stage.

PATHOLOGY.

The signs of inflammation in the mucosa uteri are masked in this regard, namely that exudates of leukocytes, round and plasma cells are all to a certain extent physiological. In the last days of the secretory period there is an outpouring of polynuclear cells probably hastening the destruction and absorption of the mucosa at menstruation. Lymphoid cells are diffusely scattered in the normal stroma and form small lymphoid aggregations at all stages of the menstrual cycle. Plasma cells, when abundant, are certainly an aid in the diagnosis of inflammation, but they are not to be regarded as diagnostic of a specific type, as gonorrhea, contrary to the statement of some writers. Where there are definite collections of pus cells or round cells, inflammation may be determined, and hemorrhage, fibrin and necrosis, or a granulation membrane are the more outspoken marks of intensity. Tubercular endometritis presents no especial feature differing from tuberculosis elsewhere.

Endometritis then shows only the same exudative, destructive or reparative processes which are characteristic of inflammation in general, and it is only when these are present that the diagnosis of endometritis should be made.

All the glandular variations and stromal changes formerly described as endometritis are now recognized as cyclic changes. A corollary of this description of endometritis is that it is practically always bacterial in origin. So it is chiefly puerperal and gonorrheal. In the severe grades there may be pseudomembranes and casts of the mucosa may be thrown off, similar to the so-called membrana dysmenorrhoica associated with dysmenorrhea.

Since endometritis means merely an inflammation of the uterine mucosa and since the chief changes occur in the stroma the term "interstitial" is tautological and out of place. Etiologically endometritis may be divided into bacterial and toxic and mechanical and thermal. All these produce identical appearances varying only in degree.

Endometritis is not usually diffuse, except in the most severe cases which are puerperal. In the form most commonly seen, associated with inflammatory adnexal disease, and which is presumably gonorrheal, it is focal and considerable areas occur without inflammatory reaction.

The distinction between acute and chronic forms of endometritis from a histological point of view, depends upon the different elements of the exudate and the effect of a chronic irritant upon the fixed elements of the tissue.

The characteristic cell of chronic inflammation is the lymphocyte and the tissue reaction is that of scar formation, the production of fibroblasts and the deposition of elastic fibrils.

These distinctions are not marked in the endometrium where lymphocytes are present to some degree in all stages, and the fibroblastic change may be seen in many cases of endometritis post-abortum, which certainly cannot be called chronic.

No practical advantage is attained by making the distinction thus vaguely indicated and it seems better to avoid controversy by not using the term chronic.

Hyperplasia.—This is the simplest and commonest expression of nonspecific pathological change which occurs in the endometrium.

The stimuli which produce inflammation may cause this proliferative change, but it is not necessarily associated with inflammation and does not show the inflammatory exudate in itself.

Hyperplasia shows itself as an exaggeration of the normal, and it may be said that the end of the proliferative stage passes insensibly into hyperplasia. It can hardly be maintained, however, as Schroeder attempts to do, that hyperplasia always limits itself to the proliferative stage and that the secretory hyperplasias are physiological.

This theory states that hyperplasia is due to follicular atresia, the death of the ovum resulting in the persistence of the Graafian follicle which may be developed into a small cyst, the persistence of which stimulates the uterine mucosa to proliferate. Thus hyperplasia is always in the proliferative stage and the secretory is held in abeyance, no corpora lutea being formed. This would limit hyperplasia to nonmenstruating uteri. It is peculiar that death of the ovum outside the ovary should cause destruction of the mucosa and death inside should cause hyperplasia of the same, as would be the case in Schroeder's hypothesis.

Ova are dying all the time in the ovary before puberty without the production of hyperplasia, nor are the small cystic degenerations of the ovary always associated with hyperplastic mucosas. Hyperplasia does not interrupt the cyclic development of the uterine mucosa, in other words one does not find hyperplastic mucosa with no signs of the secretory stage in the premenstrual period.

The basal layer of the mucosa exhibits hyperplasia as well as the functional layer, which is plainly seen in the irregular size of the glands and their penetration into the myometrium.

As far as histological appearance goes hyperplasia passes without definite boundary line into the picture of adenoma, that is, into autonomous tumor growth.

Schroeder states that there is no such thing as a local (polypoid) hyperplasia but that all such bodies are autonomous and true adenomata. There is, however, no criterion which will separate the tissue overgrowth from the autonomous tumor and many of the broad based polypi seen in the neighborhood of submucous myomata give no histological justification for the assumption that they are adenomata.

There is no difficulty in recognizing an outspoken adenoma but the changes which separate it from simple hyperplasia are all relative and not absolute. In the same way the histological picture of hyperplasia is insensibly merged into carcinoma and there is a stage which may be called precancerous, when it is impossible to separate the two.

The concept must be made that the histological appearance is the reaction of the uterine mucosa to certain stimuli and that this reaction may be the same though the stimuli may widely differ. Thus hyperplasia is the first manifestation of a reaction which may be slight so that the process stops with hyperplasia or it may be profound when a carcinoma will ultimately be produced.

Hypoplasia.—This is a condition of infantilism not often encountered by the pathologist in a form satisfactory for study, since the state does not call for hysterectomy. Clinically it is manifested by dysmenorrhea in young women. The curetings show glands in the early stage of proliferation and the diagnosis is inferred from the clinical history.

Atrophy.—This may be local or general, the glands disappear more easily than the stroma; it is characteristic of the glands to take an oblique course or run parallel to the surface. The secretory stage is absent in the glands which are irregular or dilated. This is simple regression and presents no features of especial interest.

Metaplasia is manifested in the endometrium not as a general process but only in its especial effects on epithelium or stroma, particularly in the development of neoplasms. It therefore need not concern us further. Neoplasms will not be discussed since their relations to the endometrium are not specific.

Adenomyoma and adenomyometritis are outside the scope of this paper since they are not properly of the endometrium.

The two important pathological conditions of the endometrium, apart from neoplasms, are therefore inflammation and hyperplasia.

Although they are closely related, it is better to separate them and to use the term endometritis for the conditions showing exudative processes, since simple hyperplasia shows no signs of exudation.

It remains to coördinate the physiological, histological and pathological data in their relationships to each other.

The physiological data concern the secretions, the histological are the cyclic changes and the pathological are endometritis and hyperplasia.

The secretions and the cyclic changes are definitely to be related to each other, the secretions being the product of the mucosal development. There is practically no secretion during the proliferative phase, and the premenstrual stage may well be termed the secretory. So secretory and cyclic changes may be considered together with reference to pathological change.

The general conclusion from examination of many curetings examined at the Woman's Hospital in the past six years from all types of conditions indiscriminately received, is that the uterine mucosa is very resistant to pathological change.

All other recent writers make the same statement, which is a marked contrast to the idea which formerly prevailed, that very slight irritants produced changes in the endometrium.

THE EFFECT OF INFLAMMATION (ENDOMETRITIS) UPON THE NORMAL HISTOLOGICAL CHANGES OF THE MENSTRUAL CYCLE.

The material on which observations were made consisted of all the cases of simple uncomplicated endometritis, exclusive of those following abortion, which were met with at the Woman's Hospital in the past year. There were thirty such cases, which is too small a series to exclude the effects of a chance selection, but since the findings were uniform and correspond to other series which have been reported they are submitted. In no case did the endometritis produce alterations in the glands or the stroma such as to make the cyclic phase unrecognizable. There were no alterations in the number or the size of the glands or their outlines which were traceable to the inflammatory exudate. The stroma indeed was sometimes fibroblastic, but that also occurs without the presence of inflammation.

These thirty cases were examined for clinical evidences of disturbance of menstrual function, hemorrhage and irregularity of the periods, to see how far these were referable to the uterine inflammation.

The histories, however, showed that eleven of them gave some evidence of salpingitis, or adnexal disease and that curetings only had been sent to the laboratory. Five others were in reality postabortive, though the cureting gave no evidence of placental tissue. Of the remaining sixteen nine showed metrorrhagia or menorrhagia or irregularity while seven were regular but suffered from dysmenorrhea. It appears from there figures that simple uncomplicated endometritis is seldom encountered, and it cannot be a frequent cause of the common disorders of menstruation. Even in such of our cases as had a history of hemorrhage or irregularity it was not plain that the two were related since the clinical symptoms were stated to be habitual while the endometritis was acute.

Endometritis postabortum is much more frequently encountered at the Woman's Hospital, eighty-four cases having been examined in the laboratory in the past year. Of these all gave clinical evidence of hemorrhage or vaginal discharge. These cannot be included as disturbances of normal menstruation.

THE INFLUENCE OF SALPINGITIS, ACUTE AND CHRONIC, AND OTHER ADNEXAL INFLAMMATIONS UPON THE ENDOMETRIUM.

Out of a total of fifty cases of salpingitis where the uterine mucosa was also available for examination, sixteen, or about 30 per cent., showed an endometritis of greater or less degree.

As was to be expected the mild and chronic cases showed endometritis less commonly. None of the fifty cases produced any change in the histology of the menstrual cycle so that the phase was not recognizable. This corresponds to the finding in the case of endometritis. The histories of these fifty cases showed invariably some menstrual disturbance, chiefly hemorrhage and rarely amenorrhea. From a practical standpoint the conclusion may be drawn that the cause of irregularities and hemorrhage is much more frequently adnexal disease than endometritis.

Endometritis, when it does occur may or may not be accompanied by hemorrhage and irregularity as the histories of these cases show. It is generally recognized that there is no characteristic local anatomical basis for uterine hemorrhage. Atypical menstruations are to be referred to changes in the endocrine system rather than the endometrium.

HYPERPLASIA IN REFERENCE TO THE MENSTRUAL CYCLE.

As already stated Schroeder holds that hyperplasia does alter the menstrual cycle, advancing the theory that it is due to follicular atresia and stating that the conditions met with in the premenstrual stage are physiological.

It is impossible to place artificial limits for the normal and abnormal variations in the thickness of the uterine mucosa, and a normal premenstrual increase may lead to false conclusions of hyperplasia. The demonstrable occurrence of a secretory stage in such undoubted hyperplasias as are seen in adenomatoid polyps, however, puts beyond a doubt that hyperplasia extends into the secretory stage. The conclusion may therefor be made that hyperplasia also has little effect upon the histology of the normal menstrual cycle.

WOMAN'S HOSPITAL.

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THE CONTRIBUTIONS OF WILLIAM SMELLIE TO OBSTETRICS.*

BY

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(With three illustrations.)

MEDICAL history for the most part is interesting to the student only from a historical viewpoint and practical knowledge gained in this way as a general rule is not of great value. However in obstetrical science this is not true for not only are the lives and achievements of the obstetricians of the 17th and 18th centuries historically interesting, but the practical study of their works is of utmost value to the present-day practitioner of obstetrics. In no other field of medicine have there been so few changes in operative technic and it is safe to presume that certain obstetric procedures such as podalic version, breech extraction and forceps application were performed by these men with as much skill and dexterity as obtains to-day.

Up to the present day no obstetrical author ancient or modern has contributed so many principles of obstetrical science as William Smellie, a Scotsman born in 1697 and died in 1763. Some idea of the fascinating medical career of this man may be gained by mention of his intimate friends such as William Hunter, James Douglas, Tobias Smollett, William Cullen, and John Gordon and of some of his contemporaries Samuel Johnson, Joshua Reynolds, David Garrick, Oliver Goldsmith, Lawrence Sterne and others.

It is, however, the purpose of this short paper to only speak of Smellie's great work on midwifery, to point out the contributions for which his name stands and to stimulate if possible a desire among

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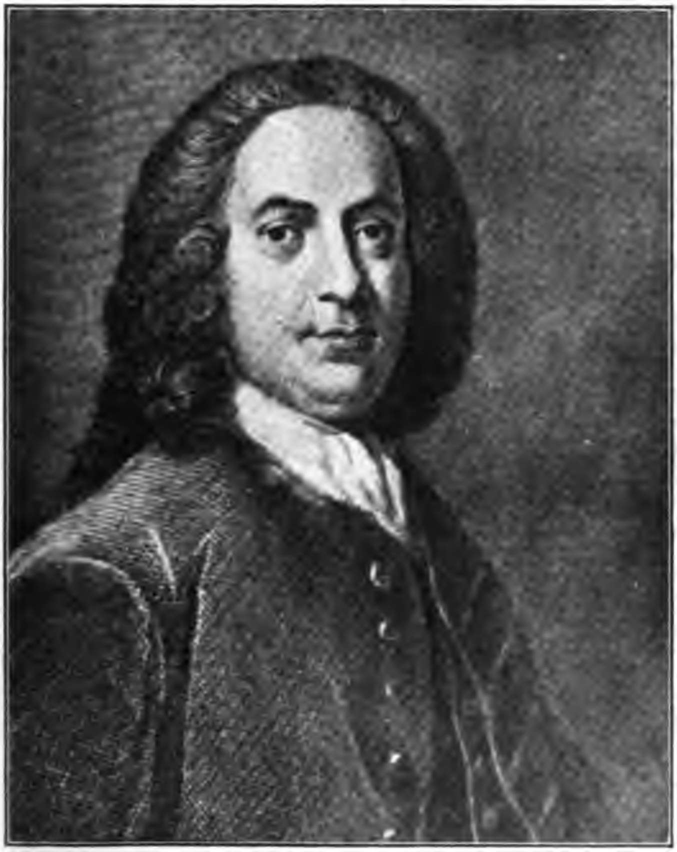
* Extracted from a paper entitled "Some Early Obstetricians and Their Works," read at a meeting of the Section on Obstetrics and Gynecology of the New York Academy of Medicine, April 22, 1919.

PLATE I

AMERICAN JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN
AUGUST, 1919



WILLIAM SMELLIE, M. D.

BORN, 1697 DIED, 1763

(From a portrait painted by himself.)

practitioners of to-day to devote some time to the practical study of this great master of obstetrical science.

This great work which was published originally in three volumes is not only a tribute to Smellie the author and teacher, but it exemplifies Smellie the practitioner as an adept obstetrician and an honest man. He acknowledges his mistakes with the same frankness as he points out his successes, and not the least interesting is the fact that the revision of this treatise was made by that master of literary art, his one-time pupil, Tobias Smollett.

A contemporary author speaks thus of William Smellie "I knew him well—he was an honest man and not only a faithful compiler of the doctrines and sentiments of other writers on the subject, but whatever he advanced as new and properly his own was founded on real facts and observation; and what ought still more to recommend him and enforce his authority with those of his fraternity, he was an enthusiast in his profession—manmidwifery was the idol of his heart; he believed in his forceps as firmly as he did in his Bible."

This then is the man who in the preface of his midwifery writes "Neither did I pretend to teach midwifery till after I had practised it successfully for a long time in the country; and the observations I now publish are the fruits not only of that opportunity, but more immediately of my practice in London during ten years, in which I have given upward of 280 courses of midwifery, for the instruction of more than 900 pupils, exclusive of female students; and in that series of courses 105c poor women have been delivered in presence of those who attended me; and supported during their lying-in by the stated collections of my pupils; over and above those difficult cases to which we were often called by midwives, for the relief of the indigent. These considerations, together with that of my own private practice which hath been pretty extensive, will, I hope, screen me from the imputation of arrogance with regard to the task I have undertaken; and I flatter myself that the performance will not be unserviceable to mankind."

Of the early editions of this work the one that is of the greatest historical and practical interest is that published in 1779 at London by Strahan, Cadel, and Nicol in the Strand, and Fox and Hayes in Holborn, to which was "added a set of anatomical tables with explanations."

These remarkable examples of medical art were thirty-nine in number and each plate was accompanied by a description. We are told that twenty-six of these were engraved from drawings done by Mr. Ramsdyke and that in eleven others the author was assisted

THE THIRD TABLE

Exhibits a Front-View of a diſtorted *Pelvis.*

A The five *Vertebræ* of the Loins.
B The *Os Sacrum.*
C The *Os Coccygis.*
D.D The *Oſſa Iliûm.*
E.E The *Oſſa Iſchiûm.*
F The *Oſſa Pubis.*
G.G The *Foramina Magna.*
H.H The *Acetabula.*

From this Plate may appear the great danger incident to both Mother and Child when the *Pelvis* is diſtorted in this manner; it being only two inches and an half at the Brim from the poſterior to the anterior part, and the ſame diſtance between the inferior parts of each *Os Iſchiûm.* *Vide* Tab. XXVII. where the *Pelvis* is one quarter of an inch narrower at the Brim than this, but ſufficiently wide below. Various are the forms of distorted Basons, but the laſt mentioned is the moſt common. It is a great happineſs however in practice that they are ſeldom ſo narrow, though there are inſtances where they have been much more ſo. The danger in all ſuch caſes muſt increaſe or diminiſh, according to the degree of diſtortion of the *Pelvis*, and ſize of the Child's head.

Vide Vol. I. Lib. 1. Chap. I. Sect. 4, 5. and Vol. II. Coll. 1. No. 3, 4, 5. Alſo Coll. 21. 27. and 29.

THE

NOTE.—The legend above is taken directly from Smellie's book, together with the illustration on the opposite page.

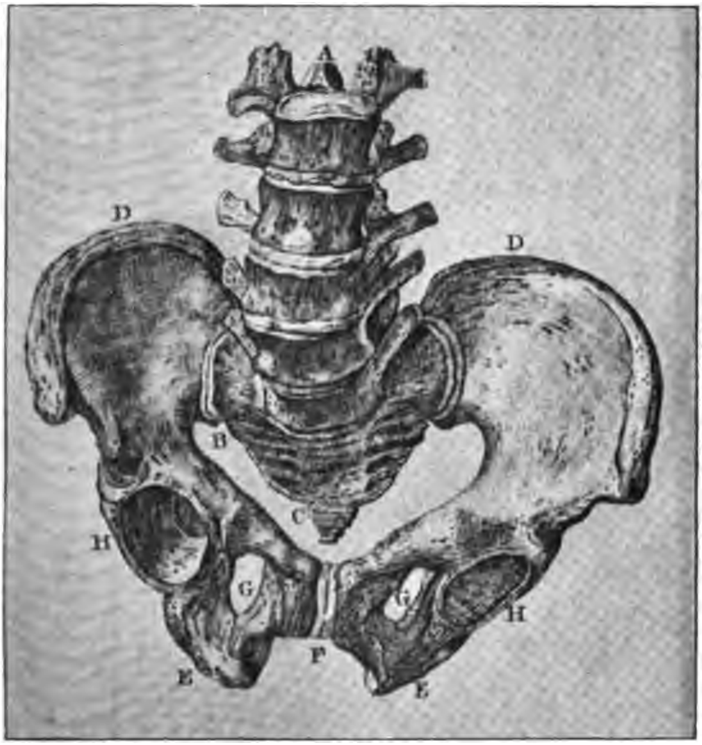


Fig. 1.

Publish'd by W. Strahan T. Cadell & Co. Jan. 1st. 1779.

by Dr. Camper, professor of anatomy and botany at Amsterdam. It is probable that Smellie had much to do with the production of all the plates for we know that he was an artist of no mean ability, a fact testified to by the painting of his portrait by himself, a reproduction of which is included in this article.

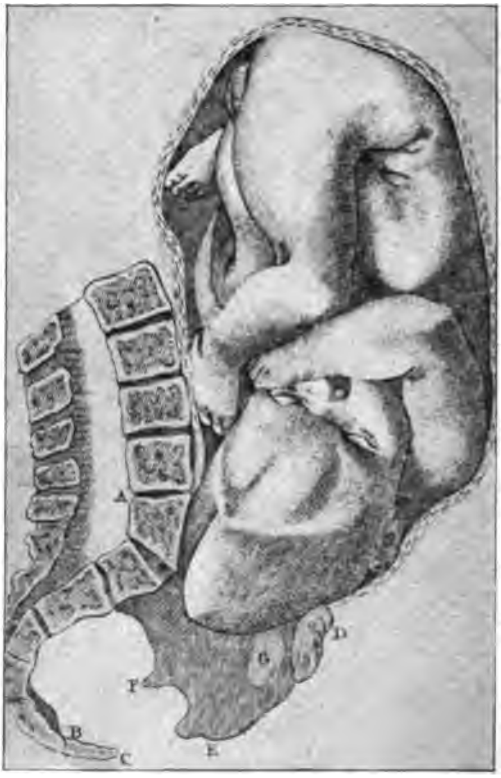


FIG. 2.

The superior quality of these engravings may be judged somewhat from the accompanying illustrations. Fig. 1 shows the admirable arrangement of text and plates. Fig. 2, the twenty-eighth plate, is well described as follows: "The twenty-eighth table gives a side view of a distorted pelvis with the head of a full-grown fetus squeezed into the brim, the parietal bones decussating each other and pressed into conical form. The table shows the impossibility in such a case to save the child unless by the Cesarean operation, which, however, ought never to be performed, excepting when it is impractical to deliver at all by any other method. Even in this case after the upper part of the head is diminished in bulk and the bones are extracted, the greatest force must be applied in order to extract the bones of the face, the basis of the skull as well as the body of the fetus."

These plates and their accompanying text bring out Smellie's principles and practice in so excellent a manner that one is immediately impressed with the practical value to-day of this text-book written one hundred and fifty years ago. Instance the twenty-first plate (Fig. 3), text in part "shows the head of the fetus in the same position as in the former table (*i.e.*, occiput posterior) . . . Forceps are applied to the head as described in this figure and brought along as it presents; but if that cannot be done without running the risk of tearing the perineum and even the vagina and rectum of the woman, the forehead must be turned backward to the sacrum." Later on, "M., the vesica urinaria much distended

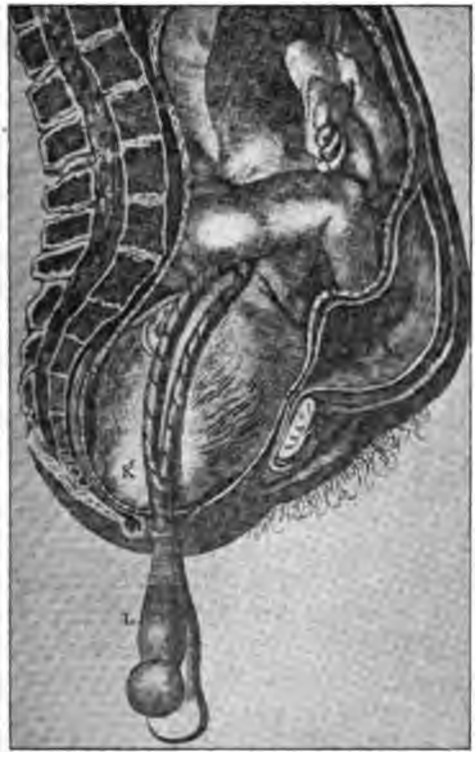


FIG. 3.

with a large quantity of urine from the long pressure of the head against the urethra, which shows that the urine ought to be drawn off with a catheter in such extraordinary cases, before you apply forceps, or in preternatural cases where the child is brought footling."

There is no question but that the most outstanding feature of Smellie's treatise is his teaching concerning the mechanism of labor. His views on this subject were far ahead of anyone of his time and it has been said that he here laid the keystone of scientific midwifery. Before this time most writers held that throughout parturition the face of the fetus looked toward the sacrum and the occiput toward the pubis, *i.e.*, in the anteroposterior diameter of the pelvis. That the mechanism was at all intricate was not dreamed of. Smellie's solution of this problem was no mere accident for he showed by the case books that he kept during his thirty years of practice that he was a diligent student of Nature. He tells us "I diligently attended to the cause and operations of Nature which occurred in my practice, regulating and improving myself by that infallible standard; nor did reject the hints of other writers and practitioners from whose suggestions I own I have derived much useful information."

Smellie primarily recognized the fact that Nature always chooses the path of least resistance and from his studies of the form and dimensions of the pelvis and of the fetal head saw that here lay the basis of the position of the fetus. He realized that the measurements of the pelvic inlet were almost the reverse of those of the outlet and that therefore the anteroposterior diameter route was not the path of least resistance.

Here then was the secret of the mechanism of parturition, that the longest diameter of the fetal head should become engaged at the pelvic brim in the widest diameter of the pelvis and throughout the whole progress of labor that this relationship should be maintained.

Another doctrine that we attribute to Smellie is that regarding the position of the fetus in utero during pregnancy. Previous to his time the generally accepted teaching was that the fetus lay in the breech position until some time between the seventh month and the onset of labor, when the reverse position was assumed. In his treatise Smellie demonstrated not only the position of the fetus with relation to the mother but also described the correct ovoid posture of the fetus as we know it to-day.

Smellie pointed out that the fetus was but a passive agent during the course of labor and changed the theory then current that a dead child was born with greater difficulty than a living one. He also first showed that an eighth month child had more chance of survival than a seventh month child, a fact that curiously enough among the laity to-day is not generally known.

By showing that the placenta might be attached to any part of the uterine cavity he thus exploded the idea that it was always attached to the fundus uteri. His method dealing with the delivery of this organ is most instructive and was opposed to the prevalent method of his day. After tying the cord with one ligature and cutting the cord his practice was one of expectancy for a time after which he urged the patient whenever possible to deliver the placenta herself by straining or bearing down. He writes (page 354, vol. ii): "I at first swam with the stream of general practice, till finding by repeated observation, that violence ought not to be done to Nature, which slowly separates and squeezes down the placenta by the gradual contraction of the uterus; and having occasion to perceive, in several instances that the womb was as strongly contracted immediately after the delivery of the child as I have found it several hours after delivery; I resolved to change my method, and act with less precipitation in extracting the placenta."

Among the most notable of Smellie's achievements was his modification of the obstetrical forceps. When he first began to practice his instruments consisted chiefly of the perforating scissors, the blunt hook, the fillet and the straight crotchet. It is not known just when he first used forceps but we are told on page 311, vol. ii, "I procured a pair of French forceps according to a draught published in the Medical Essays by Mr. Butter, but found them so long and so ill contrived, that they by no means answered the purpose for which they were intended." Later on in his treatise he says "with experience and hints which have occurred and been communicated to me in the course of teaching and practice I have been led to alter the form and dimensions of the forceps so as to avoid the inconveniences that attend the use of the former kinds."

Smellie first designed the short straight forceps about the year 1744 and the so-called English lock is undoubtedly his invention. In this connection his biographer John Glaister quotes a letter dated Jan. 12, 1747, to Mr. John Gordon, Surgeon at Glasgow. Smellie writes "About three years ago I contrived a more simple method of fixing the steel forceps by locking them into one another, by which means they have all the advantages of the former kinds without the inconveniences."

He also devised a longer curved instrument for use in mid and high positions. To him also must be accredited the perforating scissors that bear his name at the present day. Not only did Smellie greatly improve the forceps of his day but to him belongs the credit as the first obstetric writer to lay down safe rules for the application of these instruments, and these rules formulated in 1751 are practically those that obtain to-day.

Smellie's treatment of persistent occiput posterior is worthy of mention. He not only used manual rotation for this condition but also the forceps. The value of his straight forceps in this connection is obvious.

Smellie was well acquainted with accidental hemorrhage and placenta previa and he also pays especial attention to puerperal diseases and discusses under this head diet, air, sleep, rest, excretion and the "passions of the mind." For laceration of the perineum he recommends immediate surgical repair.

Smellie perfected the obstetrical manikin which he used in his teaching and from the description of his apparatus it is doubtful whether at the present day any apparatus of that nature may be found as ingenious or as complete.

An interesting chapter found in the latter part of the first volume bears the title "Of the Requisite Qualifications of Accoucheurs, Midwives, Nurses Who Attend Lying-in Women, and Wet and Dry Nurses for Children." His words to accoucheurs are worth closing this article with, not only because of the lofty minded sentiments expressed but because they depict the noble character of the man who wrote them. He writes "but over and above the advantages of education he ought to be endued with a natural sagacity, resolution and prudence; together with that humanity which adorns the owner, and never fails of being agreeable to the distressed patient; in consequence of this virtue, he will assist the poor as well as the rich, behaving always with charity and compassion. He ought to act and speak with the utmost delicacy of decorum, and never violate the trust reposed in him, so as to harbor the least immoral or indecent design; but demean himself in all respects suitable to the dignity of his profession."

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SOME REMARKS ON INVERSION OF THE UTERUS WITH THE REPORT OF A CASE OF SIXTEEN MONTHS' STANDING.*

BY

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(With two illustrations.)

It has been my privilege to have had two cases of inversion of the uterus which required operative treatment.. The first case was an acute inversion seen only a few hours after delivery and was reported in 1912. It is my desire in this paper to review the first case, report my second case of chronic inversion and also to make some general remarks in reference to treatment. In the vast majority of cases, inversion is an obstetrical complication. In 1911, Thorn reviewed the literature covering a period of 22 years, collecting 641 cases. He found that 521 (81.2 per cent.) were obstetrical (full term) in origin, 83 (13 per cent.) were due to tumors of the uterus, 14 (2.2 per cent.) occurred postmortem, and 13 (2 der cent.) he classified as idiopathic, 10 (1.6 per cent.) occurred after abortions or premature labor. This rare accident occurs probably about once in 128,000 labors as shown in statistics collected by Jones. While inversion of the uterus usually follows injudicious treatment of the placental stage of labor, it is sometimes unavoidable, the result of uterine relaxation. If the accident is acute, manual reposition can be carried out successfully. Taxis should be started near the cervical ring and not at the fundus and it is important to make pressure upon the protruding mass in the axis of the pelvic canal. This treatment will not always suffice as is illustrated in my first operative case.

Case I.—Mrs. L., a multipara, aged twenty-eight years, was admitted to the Hospital Feb. 24, 1912. She had had two previous labors, both instrumental and there existed great relaxation and laceration of the lower birth canal. In her third pregnancy, she engaged the services of Dr. J. H. Donahue. She went into labor at term, Feb. 23d, 1912. Again, it was necessary to deliver her with forceps, which operation was performed Feb. 24th, at 5 A. M. The operation was not difficult and she gave birth to a female infant, weighing 9 pounds, free bleeding following the delivery. In compressing the uterus, after the usual method of treating the third stage of labor, suddenly and spontaneously the fundus left the operator's hand and the uterus and vagina turned completely inside out. The whole mass was prolapsed, hanging between the patient's thighs and to this was attached a firmly adherent placenta. The hemorrhage now became alarming and continued until the placenta was detached. An attempt was made to reposit the uterus without success. The vaginal inversion was reduced and the uterus returned to the pelvic cavity. She was admitted to the hospital at 10 A.M., five hours after the accident. Her general condition was bad, her pulse was 136, weak and her temperature subnormal. A large bleeding mass presented at the introitus which completely filled the pelvic cavity. At 12 o'clock, seven hours after her delivery, the patient was anesthetized and an attempt made to reposit the uterus by taxis. Although persisted in for some time, this method was unsuccessful. We then performed an abdominal section for the purpose of making a manual dilatation of the constricted cervix by inserting the fingers into the crater-like excavation. This was easily accomplished and as my assistant continued pressure from within, the uterus was finally reposited by taxis. A left lateral laceration of the cervix was now discovered but was not extensive and was immediately repaired. She was given a uterine douche and finally the organ was firmly tamponed with sterile gauze. The postoperative history was uneventful. Her pulse remained rapid for three or four days and she had a slight elevation of temperature. She gradually gained in strength and was discharged in the third week of the puerperium fully recovered. Abdominal section was performed in this case for the reason that we felt that dilatation of the cervical constriction could be best carried out from within the abdomen. In addition, the case had been exposed to infection before her admission to the Hospital, making any vaginal operation which might have involved the peritoneal cavity, a serious matter.

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*Read at a meeting of the Obstetrical Society of Philadelphia, May 1, 1919.

Manual reposition of the uterus naturally becomes more difficult in direct ratio to the length of time the inversion has existed. For the treatment of subacute and chronic cases, mechanical devices have been recommended. These instruments all have for their purpose reinversion of the uterus by slow or rapid pressure upon the protruding mass, the most popular instrument being that invented by Aveling in 1886. Previous to this date, few cases of chronic inversion had been successfully reduced. The sigmoid-cupped repositor devised by Aveling, is based upon the theory that axis-pushing in the direction of the upper axis of the pelvis, is superior to other methods. This device is still popular in the hands of some English operators. It is, however, not always successful, painful, and liable to cause infection. Hysterectomy also has its advocates and is surely warranted when gangrene exists or when there is marked infection but in a clean case it is not justifiable.

We are indebted to Browne in America who described his operation in 1883 and to Küstner in Germany in 1893 for the beginning of the modern conservative methods in the treatment of difficult cases, namely posterior colpotomy and incision of both the cervix and the corpus. Browne dilated the cervix through an incision in the posterior wall of the uterus. Into this incision he inserted a large Sims' dilator followed by a No. 2 and No. 3 Hanks' hard rubber dilator. The uterus incision was then sewed up and the fundus reduced through the dilated os by taxis.

Küstner went still further and performed a partial posterior colpohysterotomy. He first made a wide transverse incision in the posterior cul-de-sac opening the peritoneum and through this incision he inserted the forefinger into the inversion funnel and attempted dilatation. Next he incised longitudinally the posterior uterine wall 2 cm. above the external os extending this to within 2 cm. of the fundus. He then inverted the uterus by fixing the funnel with the index-finger in Douglas's pouch, pressing in the fundus with the thumb of the same hand, finally suturing the incision in the uterus through the incision in Douglas's pouch. The defect of this operation is in that he does not carry his incision completely through the cervix.

In 1900 Hirst recommended cutting in two in the median line posteriorly the cervix, the incision being carried higher on the internal than on the external surface. The muscular constricting ring is thus almost, if not completely severed without opening the peritoneal cavity. Later he completely severed the uterus including also a posterior colpotomy.

Kehrer in 1898 advised making an extraperitoneal incision through the entire anterior uterine wall and as he replaced the uterus he inserted the uterine sutures.

In 1899 Spinelli modified Kehrer's operation performing an anterior colpohysterotomy. He opened the anterior cul-de-sac by a transverse incision, next splitting the entire anterior wall. (This operation is well illustrated and fully described by Peterson.) My second case of chronic inversion was operated upon successfully by this method.

Case II.—The patient, Mrs. B., an Italian, aged twenty-two, was admitted to the hospital March 4, 1919, having been referred to me by her physician Dr. Feo, who, however, had not attended her in her confinement. She was a primipara and was delivered Nov. 6, 1917, after a prolonged and painful labor but not instrumental. The placenta was adherent and on making traction for its removal inversion occurred. The patient stated that she bled profusely and that a mass protruded through the vagina. Her attending physician apparently did not appreciate the gravity of the accident and made no attempt to reposit the uterus, telling her that it was a tumor which should be removed in forty days. She bled freely throughout the puerperium but with this exception, it was normal. She did not suffer pain nor were there symptoms of infection and she nursed her infant eleven months when it died. Seven months later she had a serious hemorrhage which demanded her remaining in bed for one week and she was told by her doctor that the womb was out of place. The true nature of her trouble was not discovered until Dr. Feo's examination in Feb., 1919. On examination, I found the uterus completely inverted and well involuted. It filled the cavity of the vagina and bled freely when touched. Operation March 5th, sixteen months after the accident. After sterilizing the vagina and uterus, a metal catheter was introduced into the bladder to locate its base. The perineum was then depressed with a weighted speculum, which brought the uterus well into view. It was now drawn down with a double tenaculum inserted in the fundus. First a transverse anterior vaginal incision 5 cm. in length was made just above the cervix. The bladder was separated but the cul-de-sac was not opened. Second, a median longitudinal incision was made through the anterior lip of the cervix extending 2 cm. toward the

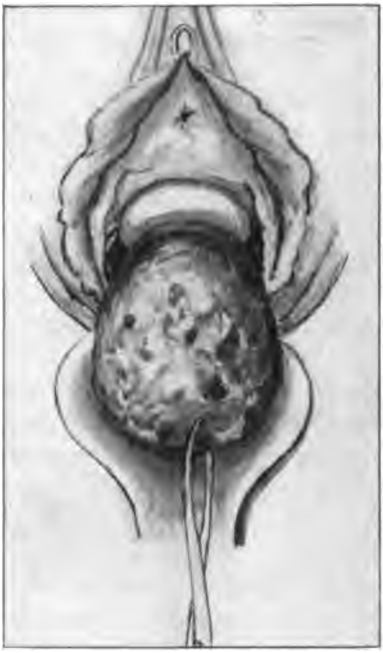

FIG. 1.—Inversion of uterus, sixteen months' standing.

fundus. An attempt now was made with the cervical constriction removed, to reposit the uterus but without success. The anterior cul-de-sac was now opened and the longitudinal incision in the anterior uterine wall also made to sever the uterus completely and carried up to within 1 cm. of the fundus. On opening the cavity of the uterus, the invaginated oviducts were found to be normal and there was no evidence of adhesions. The uterus was reinverted by making traction upon the divided lips of the cervix and forcing the fundus upward with the thumbs. There was now found to exist a decided bulging out of the anterior uterine wall so that in order to make an accurate suturing of the muscle and its perineal covering, it was necessary to remove the wedge-shaped piece from each cut edge to remove the difficulty. The incision in the uterus was closed with deep and superficial interrupted catgut sutures and the vagina replaced in the pelvic cavity. The vaginal incision was now closed, first suturing the peritoneum to the uterus. A small gauze drain was introduced into the vaginal wound between the uterus and bladder and a second drain placed in the cavity of the uterus. The patient had an uneventful recovery except for a slight elevation of temperature for the first week which I attributed to a mild saprophytic infection and she left the hospital March 19, 1919, two weeks after the operation.

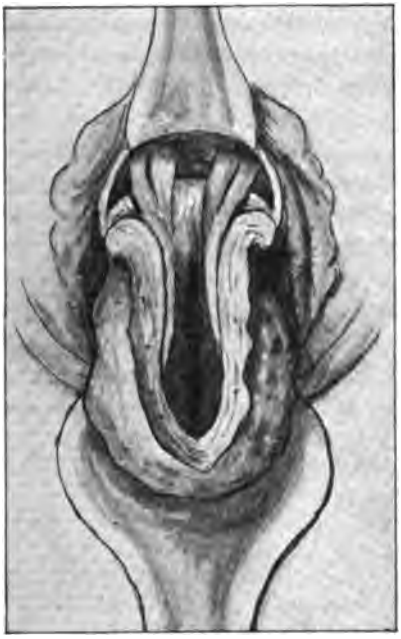

FIG. 2.—Inversion of uterus. Anterior wall of uterus opened.

In the treatment of so rare an accident, few have had an extensive experience. This fact probably explains the general hesitancy in the past to accept early operative measures. The operator has often persisted in taxis or the use of some mechanical device or pessary to the detriment of the patient. On the other hand, some operators failing in taxis, recommend hysterectomy for all chronic cases. This operation is indicated where there exists gangrene or marked infection or a tumor of the uterus but in clean cases, it is unjustifiable. In the acute case before involution is completed the uterine musculature is still hypertrophied. It is pliable and will often yield to taxis. Manual reposition should therefore be tried in all such cases but after a month or six weeks the uterus will have returned to its normal size and the tissue become firm and unyielding. In these chronic cases, manual reposition should only be carried out for a short time, if at all. By early operative measures, mortality and the comfort of the patient will be materially improved. Colpohysterotomy is therefore the operation of choice in the treatment of difficult cases. It is conservative, simple of execution and can practically be applied to all. Should the anterior operation fail, the posterior wall of the uterus could also be incised. This would undoubtedly make it possible to reposit the uterus. Anterior colpohysterotomy, the Spinelli operation, has certain advantages over the posterior. The field for operation is more accessible and suturing is facilitated.

1909 SPRUCE STREET.

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THE INDICATIONS FOR CESAREAN SECTION BASED ON AN ANALYSIS OF A SERIES OF NINETY-FIVE OPERATED CASES.*

BY

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This report does not include the sections where the primary indications for operation was not in the interest of the child, *i.e.*, ruptured uteri, and dead fetuses, one of which was the direct result of a previous Cesarean section, rupture having occurred after an active labor for four hours and two hours before she was admitted to the Samaritan Hospital. In one instance the wisdom of section, in preference to craniotomy, was debatable by reason of the difficulty in determining the existence of fetal life. A weak fetal heart sound decided the issue in favor of Cesarean section.

The predominant indication for section in this series of cases, as in all cases, was, of course, disproportion between the pelvis and child; either a pelvis varying from moderate contraction down to absolute contraction with a child of normal dimensions, or a pelvis of normal dimensions, or slightly below normal with an oversized child.

As to the probable course to be pursued, whether elective Cesarean, induction of labor before term, or the test of labor and forceps or emergency Cesarean section, conclusions were drawn by the usual methods of pelvimetry, fetometry and ability to engage the fetal head in the pelvis from time to time, also the rate of increase in the size of the fetal head by obtaining the occipito-frontal measurement, nine, six and three weeks before term, assuming that the increase in this measurement is 1 cm. in three weeks.

Estimates as to what the comparative dimensions at term would be, were pretty accurately borne out by the results in this series whenever possible to follow them up during the last three months of gestation. It is difficult to obtain this data with ward patients, and impossible with emergencies, not so with private patients.

RELATIVE DISPROPORTIONS.

Thirty-one cases had relative disproportion, with true conjugates varying from 8.5 cm. to 10 cm. and fetus out of proportion to the

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*Read before the Philadelphia Obstetrical Society, May 1, 1919.

pelvis. Ten were elective, seventeen were emergencies and four were given the test of labor in the Hospital under observation. One mother, died on the third day from acute dilatation of the stomach. One had a contracted pelvis with twins (elective). An excessive amount of amniotic fluid concealed the fact that there were twins, and I question the necessity for section as the fetuses were not large, although she was a primipara with an external conjugate of 17.5 cm. and the indications were apparently pronounced. Two of the former group had impending rupture of the uterus, as recognized by the thinning of the lower uterine segment, exhaustion, ascent of Bandl's ring and diminished force with the contractions.

One of the above with contracted pelvis and impending rupture, living about twenty-five miles from the hospital, at Churchville, Pa., was seen in consultation after having been in active labor several hours. Immediate section was imperative, although in a farm-house, with low ceiling and the best available thing for an operating table, a bureau, which was utilized for the purpose. Her temperature rose to 104° F. on the third day, from infection, in the abdominal incision when she was promptly opened and drained with gauze. A stormy convalescence and final recovery followed.

Two primiparæ, ages forty and forty-two, with pelves undersize and rigid unyielding os. One was given the test of labor. One elective.

One multipara, with relative contraction gave a history of having gone three weeks over her time, from pretty reliable data. She had been in labor twenty-four hours. The fetal heart sounds were scarcely audible and rapid. She was beginning to show signs of exhaustion and was promptly operated. While little dependence is placed on the statements of patients, as to being overdue, this child that lived only a few minutes, had the characteristic features of one past maturity. Weight 11 pounds.

FETAL DYSTOCIA.

In ten cases the indications were for distinctly fetal dystocia. The occipitofrontal measurements varied from 12.5 to 13 cm. and the heads failed to engage in the pelvis after the test of labor. Six were primiparæ and four multiparæ. The latter gave a history of having had difficult instrumental deliveries with stillborn children. One threatening rupture.

One primipara, with a slightly undersized pelvis, and a child of normal dimensions, was operated at the urgent request of the patient and her husband on the ground that she was an ex-nurse and knew the pangs of childbirth, had taken ether well before, and preferred to have her child or children by that route. No other indications.

TOXEMIA.

Two with eclampsia, primiparæ with contracted pelves, one at term and the other near term, with rigid and thick cervices, not in labor. Recovery and living children. One had had four and the other six convulsions.

One primipara, with contracted pelvis and toxic, with prodromal symptoms of eclampsia, including the disturbances of vision, epigastric pains and high blood-pressure, without convulsions. Recovery and a living child.

One primipara, with contracted pelvis near term with distinctly uremic convulsions, pronounced stupor before the convulsion, profound and persistent coma following the first convulsion, with hyaline and granular casts and albumin in the urine. This woman died twenty-four hours after operation. The child lived.

Spinal anesthesia was used in 25 per cent. of the series, including the latter case.

MATERNAL DYSTOCIA.

The indications for section in thirty-four of the number, representing twenty-five persons, were distinctly maternal dystocia, due to pelvic contraction or deformity, including five with rickets or disease of the spine, affecting the pelvis, with children of practically normal dimensions, nine of whom including one dwarf, had absolutely contracted pelves. Eleven gave true conjugates varying from 7.5 cm. to 8.5 cm.

Two of this group were operated the second time, and three of the operations were on the same person. The latter was sterilized by resection of the tubes and cauterization of the stumps.

KYPHOSIS.

For kyphosis five. One died on the seventh day from pneumonia. Two persons were operated the second time. All three had but relatively contracted pelves, but the spinal deformity was too low to permit of sufficient compensatory lordosis, besides the head could not be engaged in the pelvis. All were elective and tubes resected.

KYPHOSCOLIOSIS

Six were for kyphoscoliosis, representing four persons. Two were operated but once, and two the second time. The general health did not warrant the repetition of pregnancy and another section, and the four were sterilized.

Twice on the same person for an undeveloped pelvis of the infantile type due to coxalgia when eight years old, having lain in a cast for eighteen months when a child. This patient was sterilized. It frequently happens that women with pelvic deformity and moderately contracted pelves from rickets, kyphosis and kyphoscoliosis, deliver themselves unexpectedly or with the assistance of forceps, because many of the children are poorly nourished and undersized. The indications with the above group, however, were positive and the operation elective, with the exception of six, who had the test of labor simply because they were in labor when sent to the hospital.

Maternal conditions other than pelvic deformity or contraction alone were:

PHTHISIS.

Incipient pulmonary phthisis and contracted pelvis, one. Elective. Died four days after operation. The child lived.

PLACENTA PREVIA.

Placenta previa five. Two, of the centralis type with large placentæ membranacea, multiparæ, to the age of viability of the child, in the 27th, and 28th weeks respectively.

Two partial previæ, multiparæ, with rigid unyielding os, and relatively contracted pelves, in the 37th, and 38th weeks.

One of the low implantation type, primiparæ, with contracted pelvis, an unyielding os, and peritonitis with a small amount of fluid in the abdominal cavity; at term and in labor two days, with attempts at delivery before she was sent to the Hospital, according to the history obtained. The child was alive and section was the only alternative. She was drained, but died on the third day from peritonitis. Bleeding has not been excessive at any time.

FIBROID UTERUS.

One for submucous fibroid, in the lower uterine segment, blocking the parturient canal. Elective section and hysterectomy in the thirty-eighth week. Recovery and a living child.

OSTEOSARCOMA OF THE PELVIS.]

In this case the origin of the growth was apparently from the ilium near the right sacro-iliac joint and occupied at least one-third of the pelvic cavity, when she came under my observation in the ninth month, making birth by the natural route impossible. Elective section was performed, with a living child. Suppuration of the tumor began a week after operation and she died seven weeks later from the malignant growth.

OTHER INDICATIONS.

One for a large ventral hernia a year after one of Dr. Babcock's, lipectomies. While 5 or 6 pounds of fat had been removed and the abdominal wall weakened, the fascia is left intact by his operation so that the operation could hardly be regarded as the cause of the hernia. Nevertheless it existed and was sufficiently large to be a dystocic factor in labor. Elective section was performed and as she had her full quota of children with difficult labors, due to a relatively contracted pelvis she was sterilized by request, and the hernial sac closed.

One for complete transposition of the uterus, aged twenty-three following a Mackenrodt's vaginal fixation operation at twenty-one.

This woman was brought to the Samaritan Hospital in the spring of 1906, greatly exhausted with atypical labor pains and only slight contractions. The ordinary vaginal examination could not locate the cervix. A sinus was finally found running up through the abdominal cavity and the cervix located, undilated, 14 inches from the outlet, opposite the twelfth rib. Section was performed. The rupture was through the serous coat only, longitudinal, and in the median line, on the posterior wall of the uterus, which was then anterior. All that was necessary in making the uterine incision, was to slightly enlarge and complete the clean-cut rupture. After suturing, the uterus was turned right side up, and she made a good recovery. The child lived one week.

The last of the series was seen Feb. 11, 1919, through the courtesy of Dr. Bacon. Primipara, aged thirty-eight, with a funnel-shaped pelvis, slightly undersize, with hydramnios, and a fetus in the transverse position. Her abdomen was very large and pendulous and she experienced difficulty in breathing when in the recumbent posture. The doctor had difficulty in making a positive diagnosis of pregnancy until within six weeks of term, by reason of the excessive amount of fluid and the position of the fetus. On account of the density of the tissue three or four *x*-ray examinations showed only a shadow transversely above the pelvis, suspicious of a fetus, from its outline. By vaginal examination, the cervix could be reached with difficulty, then 285 days from the first day of her last menstrual period. The external and internal os were closed. Elective Cesarean section was advised, and we operated at the Garretson Hospital Feb. 14, 1919. The child never could have been delivered alive by the natural route. Weight 10 pounds. Good recovery followed.

SUMMARY AND CONCLUSIONS.

Elective section, 53. Emergency, 42. Total operations, 95. Representing 89 persons.

Sterilization by resection of the tubes with kyphosis	3
One at the first, and two at the second section.	
Kyphoscoliosis, two at the first and two at the second operation	4
Infantile pelvis, due to coxalgia, when a child, at the second Cesarean	1
Contracted pelvis and ventral hernia, by request	1
Absolute pelvic contraction and three Cesareans	1
Total	10

Ten were colored women, in seven of whom rickets was a factor in pelvic contraction or deformity.

Maternal deaths following elective section, with contracted pelvis and incipient pulmonary phthisis	1
Recoveries following elective section	52
Following emergency operations, including those examined in the home, also those with whom attempts at delivery had been made:	
Acute dilatation of the stomach	1

Uremia	1
Infection and intestinal obstruction	1
Peritonitis	1
Pneumonia	1
Total	5
Recoveries following emergency section	37

Two of the children lived but a few minutes, and two could not be resuscitated, although the fetal heart sounds were audible before operation.

INDICATIONS IN PREVIOUS SECTIONS.

A previous Cesarean section in my judgment, is always an indication for Cesarean in the event of subsequent pregnancies. They should at least be carefully watched.

INDICATIONS IN ECLAMPSIA.

Thus far personally, I have not regarded eclampsia alone, as an indication for Cesarean section, in the belief that a woman overloaded with toxins is not a good subject, for a major operation, especially an operation that involves opening of the abdominal cavity. On the other hand, many of the eclamptics improve under eclamptic treatment, when labor is established and the membranes rupture.

Cesarean is certainly indicated where dystocic factors exist plus the eclampsia, as a thick rigid and undilatable cervix and pelvic contraction, or deformity, when the traumatism and exhaustion in forcible delivery by the natural route would be greater than the shock from section.

INDICATIONS IN PLACENTA PREVIA.

There are three conditions in placenta previa, that in the writer's opinion are positive indications for section.

First: Placenta previa with a contracted pelvis of a degree sufficient to create disproportion (which could only occur near term) and with a living child.

Second: A rigid unyielding os, with a living child, and;

Third: Placenta previa centralis, with a living child, past the age of nonviability, regardless of the size of the pelvis.

INDICATIONS IN DISPROPORTION.

While the limitations in the indications of Cesarean section have materially broadened, and while it is a fact that the mortality in elective section, where the patient has not been subjected to the risk of infection, is practically nil, and section is much easier than a difficult forcep delivery, it is nevertheless a major operation, attended by some danger, and my attitude has been, with the one exception, and still is in conformity with the well-established rule with regards to the indications in disproportion, viz.: That if any doubt exists as to the possibility or impossibility of birth by the natural route, including the aid of forceps,, the patient is given the test of labor not to the point of exhaustion, but until convinced of the necessity for section.

MEDICAL ARTS BLDG.

AN OPERATION FOR THE RESTORATION OF THE RECTOVAGINAL SEPTUM.

BY

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(With five illustrations.)

CONSIDERING the pathology following in the wake of a neglected laceration of the perineum and the severity of the clinical manifestations consequent to it, perineorrhaphy, as a curative operation, at once assumes a most important position in the armamentarium of the gynecologist. I am not referring to the slight tears of the vaginal mucosa which receive cosmetic treatment at the hands of operators as a step in the routine of "cervix, perineum and laparotomy," but rather to the more extensive lacerations of the perineal body and rectovaginal septum, which are causally responsible for rectocele, and indirectly, at least, for procidentia uteri.

It is now well recognized that intrapelvic perineorrhaphy is necessary to effect a physiologically reconstructed perineum, but the cure of rectocele is an issue still improperly handled in too many cases. Too often do we find, in reviewing the results of operation on the pelvic floor, a tight semicircular band of levator-ani fibers effectively narrowing the vaginal canal at the introitus, but behind it a redundancy of mucous membrane rolled forward into the vagina or even out through the narrowed introitus by a bulging, distended rectum which has not been anchored by a proper repair of the entire rectovaginal septum. That such an operation falls far short of the demands of a curative procedure, is quite apparent. The same may be said of the method which, going a step further, hides the rectocele from view externally by suspending its crest from the upper angle of the vaginal denudation area by a few sutures. The indication is, undeniably, reconstruction of the rectovaginal septum, the integrity of which was destroyed by the retraction of the torn margins of the rectovaginal fascia. The operation advocated in this paper was devised by the late Dr. Frederick Weisbrod, at the Wyckoff Heights Hospital of Brooklyn, some fifteen years ago, and having stood the test of time in the hands of at least one gynecologist of more than considerable experience, should be well worthy of trial.

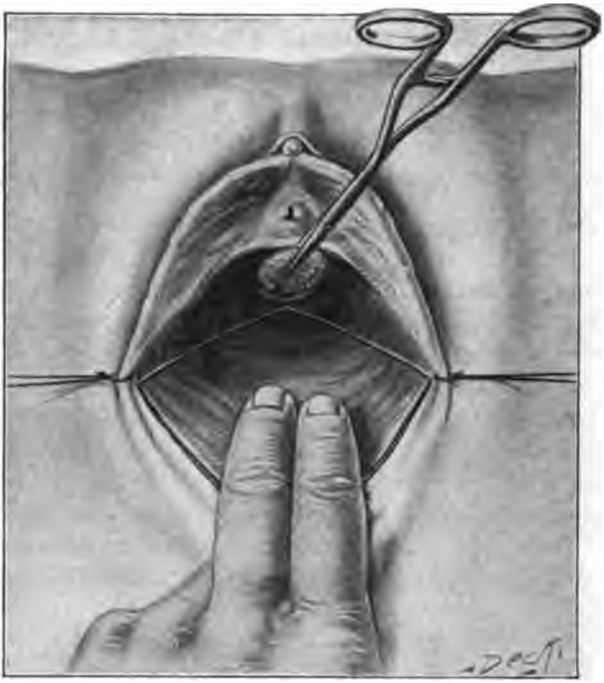

FIG. 1.—Illustrating the method of exposure and the area to be denuded.

After the usual preparation for vaginal operation, traction sutures are placed, one on either side at the lower margin of the carunculæ myrtiformes, which points limit an incision made to the inner side of the mucocutaneous junction forming the base of a triangle of mucous membrane to the excised. A stick sponge in the vagina making upward and backward pressure against the cervix, and two fingers depressing the rectocele, give a good exposure of the vaginal vault. Beginning in the median line well up above the apex of the rectocele, a curved incision with its convexity upward, extending laterally on each vaginal wall to the guy sutures, dividing the mucosa, completes the triangle (see Fig. 1). The proximity of the apex of this triangle to the posterior wall of the cervix, and the degree of convexity of the lateral incisions, both depend directly upon the amount of rectocele, the rationale being the elimination of vaginal mucosa which would otherwise be redundant after the repair of the fascial and muscular structures.

The stick-sponge is removed, a hand sponge is introduced into the vagina to keep the field free from blood, and the triangular area is now dissected free from the underlying structures from without inward, by the ordinary means, blunt dissection of the gauze covered finger, scissors or knife, care being taken to avoid opening into the rectum by keeping the line of cleavage between the vaginal mucosa and the underlying layer of veins, the already freed portion being constantly used as a tractor. As the denudation progresses a point is reached when removal of the hand sponge affords more room. Before completing the denudation the mucosa is freed at the apex and beginning at the upper angle of the denuded area a running

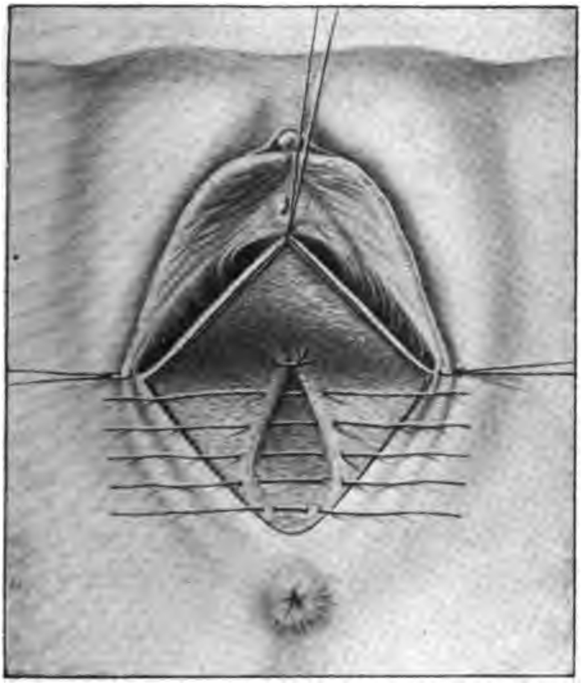

FIG. 2.—Tension on suture No. 1 exposes the retracted margins of the fascia, which are usually united by a continuous suture, instead of interruptedly, as here shown.

looped suture of No. o chromicized, forty-day gut is placed. The mucous flap is then entirely removed and the loop-suture continued, the assistant making firm traction by picking up the slack. This suture is continued only a short way at this time, the indication for temporary cessation being the appearance of the separated edges of the rectovaginal fascia now seen as two parallel margins approximated toward the median line, brought more distinctly into relief by firm traction on the slack of suture No. 1 (Fig. 2).

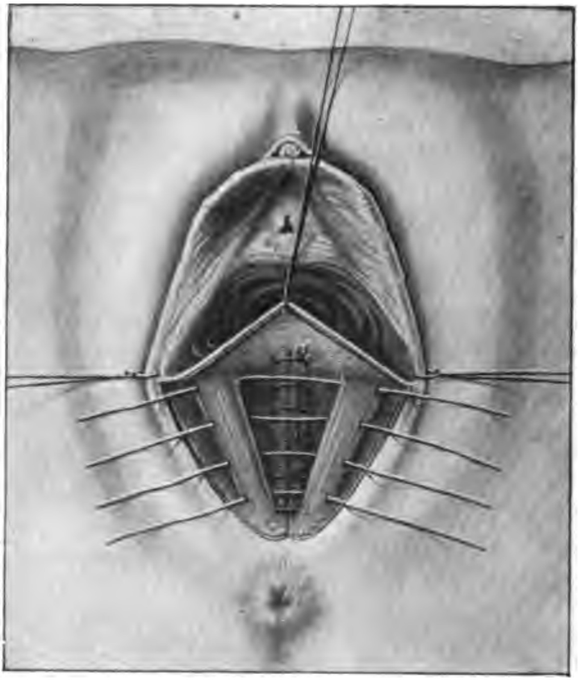

FIG. 3.—Semi-diagrammatic representation of the levator fibers after obliteration of the rectocele.

The approximated edges of the fascia are united by a suture of chromicized twenty-day No. 00 gut begun at the upper end. This suture is usually a continuous one, although Fig. 2 shows it as an interrupted one. Suture No. 2 when finally placed builds up a wall in front of the rectum entirely obliterating the rectocele, and a further continuation of suture No. 1 brings into view the margins of the puborectalis portion of the levator ani muscles.

The third suture is used interruptedly to approximate the edges of the levator ani fibers, and suture No. 1 is continued until the vaginal mucosa is entirely reunited (Figs. 3 and 4).

A few interrupted sutures uniting the separated margins of the perineal body and occluding the dead space, follow. The skin wound is closed with horsehair.

Thus a complete restoration of the rectovaginal septum has been accomplished and the rectocele obliterated. The layers, having been treated separately, have an independence which insures elasticity and pliancy without pain.

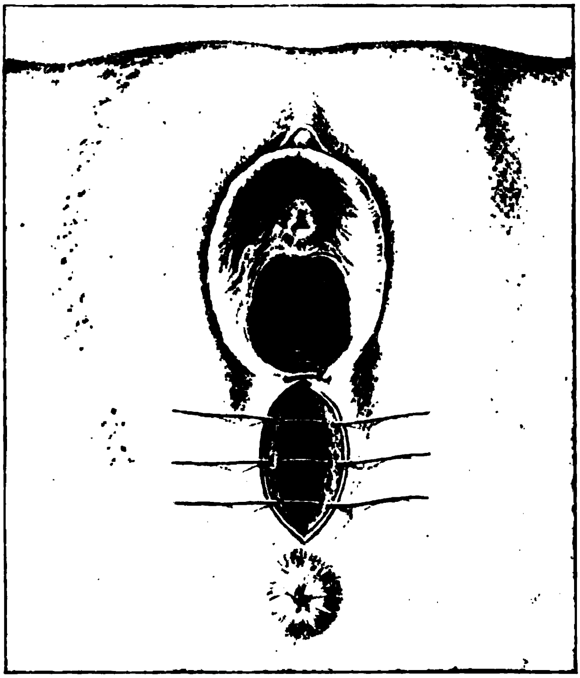

FIG. 4.—Suture not completed, the levator fibers approximated and the perineal body being reconstructed.

The importance of the high primary denudation cannot be exaggerated. It offers complete exposure of the field and it makes possible, by the application of the first few loops of suture No. 1, an unparalleled presentation of the separated fascia. The objection that the amount of tissue to be denuded could better be determined toward the end of the operation is not serious, inasmuch as accuracy of judgment is rapidly developed with practice, the vagina is capable of great distensibility, and above all, the advantages accruing from good exposure of the underlying structures, far out weigh the value of any fancied, better cosmetic effect.

We do not desire to make extravagant claims for this procedure, advancing, in support of our assertions, over two thousand cases in which it was applied, a not inconsiderable percentage of which were subsequently followed through labors in the obstetric service at the same institution, with the most gratifying results as regards elasticity of the repaired parts. Excluding the customary "breakdowns" incident to infection in the usual small percentage of cases, the operation has not failed to accomplish the desired result, namely, reconstruction of the rectovaginal septum with permanent obliteration of the rectocele.

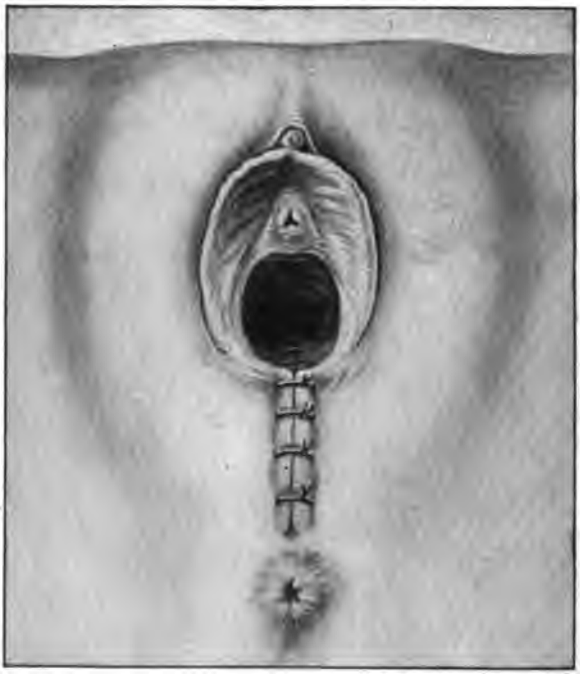

FIG. 5.—The result.

In a later paper we hope to present an anatomical basis for the application of this procedure to the relief of sequelæ of perineal lacerations other than rectocele.

721 EASTERN PARKWAY.

IS IT POSSIBLE THROUGH COÖPERATION OF SURGERY AND RÖNTGENIZATION IN THE TREATMENT OF FIBROMYOMA UTERI TO FURTHER IMPROVE THE RESULTS OBTAINED BY SURGERY?

BY

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In the AMERICAN JOURNAL OF OBSTETRICS, of March, 1919, Dr. LeRoy Broun, of New York, published "A review of the uterine myomata operated at the Woman's Hospital during 1918, comprising 262 cases." In concluding the author states: "This is the end-result of surgery applied to a series of consecutive cases by the full operating staff of the Hospital;" and then he asks the question: "Can it be equalled by *x*-ray or radium applied for the purpose of absorbing or curing the myomata, even in selected cases?" His answer is: "I question it, and especially when we take in consideration the contraindicating unrecognizable degenerative changes present in those tumors and also the associated pathologic conditions in the adnexa."

I think the question as asked by Dr. Broun is not put properly. Surgery and röntgenization are not antagonistic to each other; they must work hand in hand; the question should be: Can the coöperation of surgery and *x*-ray still further improve the results as reported by Dr. LeRoy Broun? The answer must be: Undoubtedly, it can! The very report of these 262 cases of Dr. Broun proves this.

Among the 262 cases there are reported twenty-three cases of degenerative changes in the tumor and uterus; not all of these changes are contraindications to *x*-rays.

Under pathologic conditions in the adnexa are enumerated twenty-one cases of ovarian cysts and tumors; some of these form no contraindication to *x*-rays. Likewise among the eleven cases of tubal affections some cases may be treated with *x*-rays.

Of the large number, ninety-three, of such cases as corpus luteum cysts, hemorrhagic cysts, chronic salpingitis, hydrosalpinx, the author himself says: "The majority of these conditions carry no especial significance except that of being in a great measure the cause of pain."

There are also six cases of uterine pregnancy coexisting with myoma; this condition is a contraindication to röntgenization, likewise to operation. As long as an exhausting and illuminating report of these cases is missing, it is impossible to pass judgment upon them; the present day position is to leave pregnancy in the myomatous uterus undisturbed.

Among the cases complicated with pathologic changes and adnexal affections are certainly to be found a number that were recognizable at once as such and could be excluded a *priori* from *x*-ray treatment and subjected to the knife. In others, these contraindicating changes and affections could not in the beginning have been diagnosed; such cases would have been unyielding to *x*-rays. If a woman is not either cured or decidedly improved after five series of standard röntgenizations, she must be operated upon.

We may well assume that most of the cases not complicated with degenerative changes or adnexal affections are amenable to *x*-ray treatment, and that among those complicated with such changes and affections are quite a number that offer no objection to the application of *x*-rays. Such cases are in my opinion the edematous type of myoma, calcareous degeneration, serous cysts of the ovary and hematosalpinx.

Fully conscious that I take great liberties with Dr. Broun's material and am making this computation under profound apology for my action, I would judge that a segregation of 25 per cent. of all cases for operation appears a reasonable estimate.

This percentage corresponds with my personal experience in private and hospital work. The vast majority of fibromyoma uteri that I saw were uncomplicated. The immaterial changes in the adnexa that I have seen in many operated women do not exclude *x*-ray; this latter statement I base on five years' work with röntgen rays in gynecology.

There remain, then, about 200 women who could have been cured with *x*-rays. True, the cure in most cases is a symptomatic one; some tumors disappear, the majority of them only shrink; but the symptoms—hemorrhage and pressure—are relieved.

This cure is attained without loss of life, without any morbidity or injury during treatment, without any evil after-effects. None of the 200 women will suffer from such things as: "severe colon bacilli infection of the kidneys; vesicovaginal fistula; reopening of incision; mural abscess in the abdominal wound." None of these

200 women will return with "symptoms directly referable to the end-results of the operation."

Dr. Broun states that of the 117 patients who returned, 14 gave such symptoms and says: "It is reasonable to assume that the remaining ward patients did not care to give the time to return, having no symptoms concerning which they wished to consult the Hospital."

This is quite true with some people, but it is worth while to hear what another writer has to say in this matter. Dr. John Osborne Polak in the AMERICAN JOURNAL OF OBSTETRICS (April, 1919, page 466), speaking about "Needless Operations" says: "All patients who are operated and leave the operating table alive are not cured, neither do all operations, no matter how perfectly performed, give satisfactory cures. . . . The uncured derelicts who travel from clinic to clinic are a sad commentary of the 'curealledness' of surgery and present-day obstetrics."

So it may not appear unfair to add a few cases to the fourteen with operative after-effects.

There is nowhere anything said by Dr. Broun, either in the report of the fatal cases or where disturbed recoveries or complaints after operation were observed, that in any of these cases especial difficulty of operation was met with. On the contrary Dr. Broun says of the second fatal case of embolus that "the tumor was removed without material difficulty."

So we are entitled to claim that, with a death-rate of 1.52 per cent. no fatal issue might have occurred at all among the 25 per cent. operative cases, possibly one woman might have succumbed.

With the high standard of "surgical, operating-room and anesthetic technic of the Hospital" it is reasonable to assume that the number of disturbed recoveries and after-effects would have been quite small in the 25 per cent. in proportion to the number of such accidents among the whole 262 cases.

If we now compare we may say: surgery alone has four deaths; the combination one, possibly none.

Surgery is credited with ten disturbed recoveries; the combination treatment will reduce these unfortunate occurrences to a minimum, likewise the evil after-effects of operation will be eliminated to a great extent.

To sum up, coöperative treatment of fibromyoma uteri, surgery and *x*-rays combined, will reduce mortality to *nil* or almost to *nil* and avoid morbidity, injury and after-effects of treatment in a great measure.

But even if we assume that a much larger percentage, say 50 per cent. of all cases, had to be operated upon, a combination of *x*-rays and surgery will still materially reduce mortality and morbidity. If as many as 130 women had to submit to the knife, at least two lives could have been saved, not to speak of the reduction of the number of disturbed recoveries and evil after-effects of the operation. The low mortality rate must not deceive us. It is the actual loss of life that counts; four women died in one year at the Woman's Hospital in consequence of operations for fibromyoma uteri; the employment of röntgen rays in 50 per cent. of the total number of cases would in all probability have resulted in the saving of two, possibly three lives in one year.

I am fully aware of the diagnostic difficulties in many of those cases, and of the amount of uncertainty in the röntgenization of fibromyoma uteri.

Even when we examine most carefully and segregate our cases, we will yet find ourselves occasionally in the unpleasant position of having to admit failure and having to resort to operation. In this and in some other points, surgery has the upper hand, but on the other side, the life saving quality of *x*-ray treatment cannot be denied.

So if both modes of treatment are employed in a coöperative manner, the very best results will be obtained.

Thorough examination, and constant supervision during treatment are essential factors for the success of röntgenization with a full understanding that occasionally we are unable to diagnose correctly and that *x*-ray treatment in some cases is an experiment and an attempt at cure.

In concluding I wish to say that this paper is not written with the idea to detract one iota from the most excellent presentation of his case by Dr. Broun; it is written with the intention to spread the knowledge of the possibilities of the *x*-ray treatment of fibromyoma uteri, to contribute to the preservation of life, to the avoidance of unpleasant complications, and to the augmentation of the comfort of those women who entrust their lives and well-being to our skill.

1054 SUTTER STREET.

CORPUS LUTEUM EXTRACT IN VOMITING OF PREGNANCY, WITH REPORT OF CASES.*

BY
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Not long after reading Doctor Hirst's first paper on corpus luteum extract in vomiting of pregnancy, over two years ago, the writer had under treatment what to him was the most interesting of the following brief series of cases, and the first case in which he employed this treatment.

CASE I.—Miss M. M., aged eighteen, a stenographer, had had scarlet fever at fourteen, never robust and rather neurotic.

Present history: Patient first noticed yesterday (March 7th) a swelling in right groin. This proved to be a small inguinal hernia, for which a truss was secured. Two days later she began to vomit, and on the 10th rejected everything ingested. Urine analysis was normal. Patient was put to bed and various simple foods tried. She was obstinately constipated and complained of an intense epigastric burning sensation. For three weeks her condition showed little change, varying from the retention of a small amount of liquid nourishment to the rejection of everything, including champagne. She slept but little and became quite emaciated. Gastric lavage was tried to no avail, as was the entire list of ordinary gastric sedatives and antemetics. Up to this time I thought that the acute inguinal hernia and the discomfort of a newly fitted truss in a very neurotic girl might account for the vomiting, but as the truss was removed, and the patient kept in bed, it seemed as if this theory must be abandoned, and finally the suspicion of pregnancy arose, but as the mother of the patient was always present at the time of the visit, no opportunity was given for close questioning. However, after an unusually bad day for the patient, I determined to give corpus luteum a trial. On April 5th, 1 c.c. was given deep in the deltoid muscle, and this was repeated each day for four days. After the third dose the patient was retaining semisolid food, but vomiting once or twice daily. The dose was given at intervals of two days for five more doses, the last vomiting occurring on the 20th. The treatment in this case served as a diagnostic measure. Confirmatory evidence of pregnancy was obtained later, the patient admitting that her last menstruation occurred on January 7th. This case though extremely neurotic was not cured by suggestive therapy, for nothing was guaranteed to the patient from the employment of corpus luteum.

CASE IX.—L. W., Aged twenty-five. First seen about ten weeks after last menstruation. Has vomited severely for one week. After a period of moderate nausea of four weeks' duration corpus luteum, gr. v. per mouth, three times daily was given with a cessation of both nausea and vomiting in two or three days, and no return.

CASE XII.—R. W., aged thirty-five. Last menstruation September 30th. First noticed vomiting November 15th. Three injections were given in December, for vomiting, with relief. In January a salivation developed, so profuse and annoying that the patient was obliged to remain at home. This symptom I believed to be of the same origin as nausea and vomiting, accordingly, one dose of corpus luteum was given daily for four succeeding days, with complete relief, much to the gratification of the patient.

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*Read at the Annual Meeting of the Medical Society of the State of New York, Syracuse, May 7, 1919.

CASE XVI.—J. M., aged twenty-one, a primipara. Last menstruation December 18th. Nausea and vomiting began January 20th, at first in the morning, gradually increasing in severity until about February 28th, when she went to bed and was on a limited diet for a week. Vomiting stopped, but returned upon her leaving her bed. For the last six days, March 22d–28th, she has been in bed constantly, and retained nothing. Physical examination was without particular interest, except that she showed slight loss of weight and a dry coated tongue; blood pressure 80/130, pulse 88. The patient was sent to a hospital and kept in bed. Broth and whey were allowed, and she was given corpus luteum extract injections daily, varying from one to three in number, for one week—twelve doses in all. Five per cent. glucose solution was given per rectum by the drip method in large quantities, and always retained. Sodium bicarbonate solution was for a time alternated with this, but was not retained so well. After two or three days nutritive enemata were given in addition to the glucose solution, and all nourishment by mouth stopped. In spite of the specific treatment, combined with efforts to control the acidosis, the urinary reports became more and more ominous, the urea-ammonia coefficient ranging in five examinations from 15:1 to 5:1. The acetone and diacetic acid showed a corresponding increase, and her pulse which for a few days had been 80 to 90, going to 110, when she began to look badly and became a bit more than drowsy at this point. Therapeutic abortion was done, with marked amelioration of her threatening signs and symptoms. In this case corpus luteum was a complete failure.

CASE XV.—Illustrating the efficiency of corpus luteum in a case under hospital treatment for three weeks.

Mrs. B. L., aged thirty-three. This is her third pregnancy. Suffered considerable from nausea and vomiting with two previous pregnancies, but not as severely as with present. This patient had gradual onset, with morning vomiting, merging into the all day type. She was admitted to the medical service of the hospital March 17th, three weeks previous to my first observation. During this time she has had various gastric sedatives, cerium oxalate, bismuth, even cocaine (which she says made her worse). Various diets tried, including limitation to whey. She is very positive she cannot go through this pregnancy and thinks the uterus must be emptied. Urinalysis showed a trace of albumin, trace of acetone, no diacetic acid and an ammonia-urea-coefficient of 20:1, a moderate degree of intoxication. Corpus luteum extract grain 1 c.c. every eight hours for six doses was given, and she was kept on liquids. After the sixth dose she did not vomit until April 12th, five days after first dose. This mild relapse was attributed to the limitation of her diet to liquids. A more liberal diet was ordered and corpus luteum re-[illegible]d, one dose daily for five days. Her ammonia urea coefficient [illegible]t to 30:1 and she left the hospital very much improved.

SUMMARY.

Here again I wish to offer a word of apology for assuming to summarize the results of such a small series of cases, but as they correspond fairly well with the reports of other observers, I wish to add this number to the sum total.

Number of cases treated, 17.

Number of cases benefited permanently, 12.

Number of cases benefited but relapsing 4 (not enough given).

Number of cases of complete failure, 1.

One case of pruritus, No relief.

Average number of doses, 7; had the four relapsing cases been given more at the onset as a routine there would probably have been more cases permanently benefited.

Preparation used; a 1-cc. ampoule containing 0.2 gm. desiccated substance of the gland.

DETAILED REPORT OF CASES.

No.	1st. dose.	Last dose.	No. of doses.	Result and comment.
1	4/5	4/20	9	Fine; neurotic patient.
1	4/14	4/23	5	Fine temporarily, return one month later.
3	6/14	6/16	3	Fine.
4	7/9	7/13	3	Fine temporarily, return in a mild degree two months later.
5	7/21	7/26	4	Much better while under treatment which should have been longer.
6	10/12	10/20	7	Fine.
7	11/15	11/22	5	Good, last vomiting on 24th, chronic nephritis.
8	2/4	2/15	13	Fair, relief from vomiting partial from nausea.
9	4/27	4/30	5 per mouth	Fine.
10	7/12	7/18	5	Remarkable.
11	8/5	8/18	12	Relief from vomiting not from nausea, tried administration by mouth, no result.
12	12/16	12/18	3	Complete relief from vomiting of moderate extent.
	1/5	1/9	4	Relief from profuse salivation.
13	1/12	1/19	4	Marked relief at first, return in a modified form.
14	3/10	3/14	5	No relief from severe pruritus.
15	3/29	4/4	12	No relief; pernicious form.
16	4/7	4/15	11	Fine, in hospital, ordinary treatment unavailing.
17	5/1	5/7	7	Good, nausea only.

765 CLINTON AVENUE.

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ADMINISTRATION OF THE OBSTETRIC NURSERY.*

BY

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Brooklyn, N. Y.

THE nursery in our hospitals belongs to the Obstetrical Service. Unquestionably, I believe, its proper place is on the Pediatric Service, but as long as our present system continues the obstetrical nursery is essentially an obstetrical problem. It, no doubt, is due to the fact that the nursery falls, so to speak, between the two services that the care of the babies during the first few weeks of their lives has been somewhat neglected.

The purpose of this paper is not to tell the members of this society anything new but to call attention to some very palpable faults in the management of the obstetrical nursery.

There are numerous ways of ligating the umbilical cord and yet with two exceptions, the end-results obtained in our hospitals seem to be identical; that is we seldom see any bleeding from the stump and infections are almost unknown. However it seems apparent that the total removal of the cord as practised by Dr. Dickinson, or the method used by Dr. Pomeroy of tying the cord at the skin margin leaving very little stump, give the best results. To quote Dr. Dickinson "It is the only clean amputation in surgery that we leave to slough off." In Dr. Dickinson's method, of course, there is no cord left to fall off and in Dr. Pomeroy's method we find the stump falls off between the third and fifth day. Using any method that allows of a considerable stump, I have found in the various maternities that the cord remains from seven to ten days and more. Sometimes the baby is sent home with the cord still on. The longer the cord stays on the more irritation there is at the navel and the more apt there is to be the slight purulent or bloody discharge which will sometimes continue for weeks after the cord falls. The plea for the long stump is that it is safer in the hands of students and internes; if the cord bleeds it can be tied again further up. This may be true but if students and internes are trusted with an obstetrical delivery where a postpartum hemorrhage may occur they ought certainly to be allowed to tie the cord short after sufficient demonstration. The point I am trying to make is that it is important to get the navel healed as early as possible and this is accomplished by the early dropping of the stump. Therefore, the short tie of Pomeroy or the Dickinson method ought to be more freely used. Since cord infections are so rare it seems a waste of material to use alcohol, iodine, powders, etc., for cord dressings. A simple dressing of sterile gauze, changed only when soiled, seems to me to be sufficient. The places using no antiseptics or powders have as little trouble with cord infections as those places using more elaborate dressings. It is, of course, important to keep the gauze over the navel which certainly is not altogether accomplished by the band. If you inspect nurseries and remove the bands you will sometimes find the dressing over the spinal column instead of over the navel. At the Long Island College Hospital they have a good method of holding the gauze in place by strapping a piece of adhesive 3 inches wide and about 4 to 5 inches long over it. This is left on for eight days before removing. The only objections may be that there might be some irritation from the adhesive and also the plaster becomes soiled.

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*Read at a meeting of the Brooklyn Gynecological Society, May 2, 1919.

The use of the silver salts to prevent gonorrheal ophthalmia in the new-born has been sufficiently proved. It is very rarely that we see a true case of it in our nurseries. On the contrary, I believe the main trouble we have is irritation of the eyes from overtreatment. On visiting many of the leading maternities of Greater New York, this fact was very prominent. In the first place, I think the silver solutions used are too strong and in the second place daily irrigations of the eyes with boric acid solution is not only superfluous but is apt to irritate a normal eye. Silver nitrate should not be used at all. It is too irritating and you will find more irritated eyes in the institutions where it is used than in places using argyrol. Argyrol seems to be the least irritating, but it should be fresh, not stronger than 20 per cent. and should be used but once. Too strong or too old solutions of argyrol will cause irritation. The average human being does not wash his eyes every day with a solution of boric acid except for some indication. Therefore why should we pump a foreign substance such as boric acid upon the delicate conjunctiva of an infant every day? I think the practice of daily boric acid irrigations of normal eyes should be stopped.

In most of the hospitals, after the baby is born, the cord dressed and band placed, the baby is put on a sterile towel, wrapped in a blanket, carried to the nursery and left there until oiled. Should the youngster kick off the blanket it is exposed to cold. At the

Manhattan Maternity they have an excellent practice of putting the baby in a canton flannel bag with a hood attached and then also wrapping it in a blanket.

Keeping the head of the crib lowered after delivery to allow mucous and possible aspirated liquor amnii to be expelled is not a custom in all hospitals but it should be done. At the Brooklyn Hospital the foot of the crib is raised 6 inches and kept that way twelve to twenty-four hours. It is surprising how much mucous is expelled by these youngsters. At least the foot of the crib should be elevated until mucous ceases to be expelled.

It seems that in the average hospital the smallest room, or largest closet, is selected for the Obstetrical Nursery. With the possible exception of the Lying-In Hospital, I do not believe there is one place in which enough cubic feet of air space is allowed for the newborn babies. According to the State Department of Health, 200 cubic feet of air space should be allowed for each infant in day nurseries. According to the State Board of Charities, the air space provided in nurseries for babies under six months of age should be not less than 600 cubic feet. However, with the exception of the Lying-In Nursery I am quite sure there is not one hospital providing 200 cubic feet of air space per infant in their nursery. I am sorry to say that I took the exact dimensions of but one nursery. This, however, is larger than the average and can be used for an example. Here the nursery is a large double room with an opening through the wall fully 7 feet square. One room measures 12 × 15 × 12 feet or 2700 cubic feet, the other room measures 15 × 11 × 12 or about 2000 cubic feet. Thus the two rooms have about 4700 cubic feet of air space. In both rooms they average about 30 babies which allows 156 cubic feet of air space for each baby. Certainly not enough to obtain the best results. Holt says "One of the reasons why young infants do so badly in institutions is because of overcrowding."

I found the rules regulating the temperature varied considerably. Thus at the Long Island College Hospital the temperature should be kept at 80F, at the Greenpoint Hospital 80–84, at the Lying-In 80–85, at the Women's, Methodist Episcopal, and Nursery & Child's 70 degrees, at the Brooklyn Hospital 70–75 degrees and at the Sloane Maternity 70–72 degrees. Thus here is a difference of 15 degrees, 70 the lowest and 85 the highest. However, on my visit I read the thermometer at each of the above places and found the temperature either 75 or 76. The nurseries were all comfortable and I think 75 is a good practical temperature for a nursery. Certainly over 80 is too warm and 70 is a trifle cold.

Ventilation is usually obtained by opening windows during a nursing period when most of the babies are out. Of course there is an objection to this method for the babies left in the nursery, and there are always some, are liable to get cold. All nurseries should have ventilators at the top of the room and some device should be made to allow fresh air to enter the room without creating a draft. At the Brooklyn Hospital and the Women's Hospital they have a glass frame 1 foot high which allows air to enter when the lower sash is raised, directing the current upward thus preventing a direct draft. At the Manhattan Maternity they have a very ingenious device invented by Miss Cadmus, the superintendent. The lower sash is raised about 9 inches and the opening boarded. In the center of this board fits a tin ventilator which runs over the sill and down behind a radiator where the opening is. Thus in the winter the fresh air is warmed (a damper is attached to regulate it). At the Nursery & Child's Hospital the lower sash is raised and the opening also boarded and screened. Attached to an opening in the board is a V-shaped box with seven holes at the top, allowing air to enter the room. These openings can be closed or opened by a slide. The average nursery is poorly ventilated. Proper ventilation of our overcrowded small nurseries is an absolute essential.

In Brooklyn maternities the number of nurses in the Obstetrical Nursery is far too few. In Manhattan better provisions are made but even then when you ask if there is a nurse in the nursery all the time they answer "there should be but at times the nursery is empty." In one of the hospitals there were eleven private and twenty-five ward babies. Four of the private babies were cared for by special nurses leaving thirty-two to be cared for by the regular nurses. The night nurse washed five babies before 7 o'clock, leaving twenty-seven to the two day nurses. These twenty-seven were disposed of between 7 and 9.30 o'clock, an average of ten minutes for each baby. Certainly ten minutes is too short a time in which to wash and weigh a baby, take its temperature, irrigate the eyes, swab out the nose and mouth, fix the bed and then chart everything. In this hospital they average about thirty-five babies and have only two day nurses and one night nurse. In this same hospital they have twenty-four adult patients on one of the wards and six nurses and one head nurse to care for them. Three nurses for thirty-five babies and seven nurses for twenty-four adults seems to be very much out of proportion. Most obstetricians do not care to handle confinements at the patient's home. That is perfectly proper, but if they insist upon the patient going to a hospital it certainly is the doctor's duty to see that her baby receives proper care in the hospital.

It is a question whether it is advisable to bathe a baby every day during the first month of its life. Oiling every day with a bath every third day seems sufficient. The late Dr. Hussey of the Brooklyn Hospital investigated this question but unfortunately died before his results were known. At the Brooklyn Hospital a series of fifteen babies were washed every day and another series of fifteen washed only every third day being oiled every day. In this short series there could be seen no difference in the two sets of babies. Most of the nurseries use castile soap either boiled in solution or powdered, enough of either being added to the water to make a lather. At the Woman's Hospital they use five or six drops of Synol Soap in the water. A few places still use the bar castile, a practice which I think should be discontinued. Gauze wash cloths are mostly used. At the Long Island College Hospital and the Woman's Hospital they use outing flannel. In all places the wash cloths are boiled after using and a separate one used for each baby. The Lying-In Hospital, I think, follows the best and most sanitary method, they use sterile absorbent cotton balls which are discarded after using. Without question if wash basins are used for the bath they should be sterilized by heat between each bath, yet this practice is not followed in any hospital that I know of in Greater New York. At the Nursery & Child's Hospital and at the Greenpoint Hospital the basins are soaked in 1 per cent. lysol solution between baths. At the Greenpoint Hospital they take a further safeguard—the nurse washes her hands between each bath and after changing a diaper soaks the hands in lysol solution, a custom that other hospitals may well follow. At the Long Island College Hospital they overcome the wash basin question by laying the baby on a protected slab and using water, judged by the nurse to be about 90 degrees, right from the faucet. There is a serious objection to this method; the water may suddenly become too hot or too cold, also it leaves the judging of the temperature to the nurse. At the Brooklyn Hospital a mixer is used which allows of the water to be kept constantly at any desired temperature with no variation. At the latter place, the baby is laid on a porcelain slab and bathed by means of a spray attached to the mixer.

Safety pins or buttons should not be used on any of the baby clothes, especially those worn next to the skin. Yet with the exception of the Woman's Hospital, safety pins are too freely used. There they use a diaper with two long pieces of tape at one corner so that when the diaper is folded and placed on the baby the tapes tie around the body. They also use a band with four pieces of tape at one end so that when fitted around the abdomen two ties can be made. All hospitals without exception use shirts of cotton and wool, buttoned in front. I have here a shirt which can be bought at any department store and which is fastened by means of tape (name is Vanitas, I think) a modified Rubens' shirt. This shirt has the additional advantage in having the ends overlap on the abdomen, thereby keeping the stomach warmer than the ordinary shirt. In addition a gertrude and a cotton slip (both to be taped) should constitute the baby's clothes. The usual custom is to launder the clothes. At the Brooklyn Hospital all the clothes are steam sterilized after coming from the laundry.

In all the nurseries the three-hour feeding schedule is followed (at 2, 6, 9 and 12 A. M.; 3, 6, 10 P. M.) making seven feedings in all. At the Brooklyn Hospital the 2 A. M. feeding is omitted, a practice which I question is right. I think the babies lose more weight than necessary.

Babies with suspicious rashes or discharges are isolated in all hospitals. However I could not learn how thoroughly this was done or whether special nurses cared for these babies.

The transportation of the baby to the mother is accomplished in most cases by an easily movable cart on wheels. The best type being a cart holding six babies and fitted with a mattress, rubber sheeting and sheet, also a padding for protection of the babies' heads and a blanket for covering. However, I found the best method of transportation at the Greenpoint Hospital where four cribs are held on a rack fitted with wheels. At feeding time the rack is simply rolled to the mother thus saving the handling of the baby twice at each feeding or fourteen times daily. At the Long Island College Hospital they have a cart without a mattress or padding of any kind, the babies being simply laid on the boards wrapped in a blanket. I prefer the carts offering protection to the babies for there are times when the nurses are pressed for time that the babies are not handled as gently as they might be. In quite a few of the hospitals, the nurses are allowed to carry two babies at one time. This is a practice that should be condemned. Carrying two babies at a time allows of more chance for contacts and trauma.

Premature babies should be transferred to the Pediatric Service where they rightly belong. In Brooklyn the care of premature babies is woefully neglected both as to feeding and keeping them at a uniform temperature.

The most glaring fault by far in the obstetrical nursery is the present method of identification. When one stops to consider that since the large majority of the laity object to maternities because of fear of having their babies mixed, it seems negligent on the part of the profession for not seeking better methods of identification before this time. Indeed law suits have been instituted on this ground. I do not believe that even with our present poor methods babies are changed, yet nevertheless it is about time for the profession to wake up and by the proper method assure the laity that women having their babies in our institutions leave the hospital with their own baby and not someone's else. Many of our own colleagues, in fact I think most of them, object to their wives being confined in hospitals solely for this reason. Wristlets made of adhesive plaster, tape and adhesive, and tape with an indestructible linen tag attached, are the most common methods of identification at the present time. These are either tied or sewed around the wrist; where simple adhesive is used it is just stuck on the wrist. They, of course, contain the baby's name. Some places use indelible ink but most places use ordinary writing ink. At the Brooklyn Hospital the method has been to stick a piece of adhesive plaster, having the name of the baby on it, on the baby's chest. These methods are all faulty. The wristlets slip off the wrists, the adhesive falls off and the ink after a few days becomes blurred and difficult to read. In one hospital I tried to read the names on four wristlets but found the ink so blurred that the names were indistinct. At another place I found a baby with no mark of identification at all, the wristlet having slipped off. Many times I found that the wristlet could easily be slipped over the wrist. The Wesson Maternity in Springfield, Mass., deserves great credit for being dissatisfied with the usual methods of identification and seeking something better. They use a card in a circular tin frame. On the card board is written the name and then a coating of shellac is painted over it. A sterling silver chain is placed around the baby's neck perforating the tag. The chain is attached by a spring ring. The objection to this is that the tag is rather large, tin is not safe near the baby's neck, the spring ring may open and the silver chain blackens and irritates the neck. Criticism is useless unless some remedy is suggested. The most scientific and legally sound method of identification is the finger print system. This was first thought of, as far as I know, by the late Dr. Hussey of the Brooklyn Hospital, but his experiments were interrupted by his untimely death. However, this method is very complicated and requires too much experience and time for practical value. I have found that babies can be marked very distinctly by using a good dye dissolved in a 50 per cent. silver nitrate solution. The dye holds the name on the body until the silver oxidizes and when that happens (on the second or third day) the name will remain for over two weeks. The only objection to this method may be that the parents might object to their child being marked or branded. I think, however, it is the best and surest method. At the present time we have at the Brooklyn Hospital several babies identified by means of a necklace of beads, the letters of the name appearing on successive beads. These beads are strung on a strong varnished fish line, plain beads being used to fill up the necklace. It is placed around the neck, double knotted and the ends sealed with a small lead shot, such as were formerly used to secure the ends of sutures. The babies are perfectly comfortable with the necklaces, there being no irritation to the neck, and the mothers are immensely pleased. These necklaces, put on immediately after delivery and left on until the baby is given to the mother ready to go home, offers, I think, a better method of identification than any we have at the present time.

CONCLUSIONS.

1. The maternity nursery should be under the care of the Pediatric Service.
2. The nursery should have more air space, more ventilation and more attendants.
3. Babies should have less umbilical stump, less washing and less irritation to the eyes.
4. There should be abolished all pins and our present methods of identification; substituting, for the former tapes on the clothes, and for the latter the beads which I have presented this evening, or at least some better method than we have at the present time.

In closing I want to give credit for the originating idea of the beads to the chief of my service, Dr. Ralph H. Pomeroy.

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THE NUTRITION OF THE FETUS.*

BY
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PREGNANCY is essentially a problem in nutrition, and at this time the dominant metabolic forces are those which favor growth. The mother's gradual but consistent gain in weight amounts finally to about thirty pounds; exceptionally, it is as little as ten to fifteen pounds, and at the other extreme as much as forty to fifty pounds. With individuals inclined to be stout the increase is greater; and it is relatively greater in later pregnancies than in the first. During the early months of gestation the weight generally remains stationary or suffers a slight loss; even in those instances in which the weight begins to increase shortly after conception the gain is less marked than later. For the last three months the average monthly gain has been found to be between 3.5 and 5.5 pounds.

The mother's increase in weight is attributable in part to the fetus, the placenta, the amniotic fluid, the uterus, and the breasts; but to some extent all the maternal tissues respond to the stimulus toward growth. Probably, the relative importance of this last factor is too easily overlooked, for naturally, the special development of the ovum first seizes upon and is likely to monopolize the attention. On the other hand, the extent of the participation of the mother's body in the growth of the gestation period may be shown by a simple arithmetical calculation. Thus, if the weight of the product of conception at full term together with that of the parturient uterus is deducted from the mother's total gain in weight, it appears that only about half of her increase is accounted for. Obviously, the remainder must be ascribed to her body tissues in general. This fact suggests the correct answer to a question which physiologists have submitted directly to experiment, namely, "Does the material provided for the growth of the ovum come from the mother's tissues or from her food?"

At first it was believed that for the mother pregnancy constituted a period of sacrifice and that fetal growth occurred at the expense of her tissues. Exceptionally, if the mother's food is inadequate, this may be true. It is conceivable, too, that small amounts of various materials derived from the mother's tissue may be contributed regularly to the ovum while its implantation is in progress, but in a quantitative sense the requirements of the very early stages of development are negligible, and the period itself is a brief one, probably no longer than the time required for adjustment between the blastocyst and the uterine circulation.

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* Read at a meeting of the Ontario Medical Association, Toronto, Canada, May 29, 1919.

NOTE.—The investigations by the author and his collaborators which are the basis for this report were made in the Department of Obstetrics and Gynecology, Yale Medical School, through the use of the Julia E. Brooker Fund.

With the data at hand to support it, the current view is that pregnancy represents for the mother a gain, rather than a sacrifice, and accordingly that her tissues are not deprived of material to supply the new organism. Both animal experiments and observations upon women indicate that the mother's food furnishes the substances incorporated in the body of the fetus. Thus, in the case of dogs, elaborate analyses of the food on the one hand and of the excreta on the other teach that notable storage of the foodstuffs is characteristic of pregnancy. Furthermore, if this storage is compared with the amount of material contained in the bodies of the young it appears that the mother's food is sufficient not only to meet her own requirements but also those of fetal development. Similar studies in which Bar selected rabbits as the subjects of experiment led to an identical conclusion. With regard to human pregnancy Wilson concludes from his extensive studies of nitrogenous metabolism that an ordinary diet provides for every fetal requirement and permits storage to begin in the maternal organism at a much earlier period than is generally supposed; perhaps, it begins at the very outset of pregnancy.

What are the substances required for fetal nutrition? This question may be answered in two ways. On the one hand we may infer the needs of the fetus from those of the new-born infant which is, of course, sustained by its mother's milk, a fluid of familiar composition. Or, on the other hand, upon the fair assumption that substances found in the fetus represent its requirements for growth we may resort to analysis of its body. From information of this kind we conclude that there is no great difference between the fetus and the adult so far as the quality of the food requirements are concerned; in their life processes both use the same organic and inorganic substances which we know are always available in the circulating blood of the mother.

The constituents of the mother's blood include nutrient nitrogenous substances, carbohydrate, fat, oxygen, water, and inorganic salts which together meet all the requirements for tissue growth and energy production. That these are at the disposal of the fetus, there can be no question; and yet it is equally certain that none of them may pass directly into its circulation. Across the path traversed by these substances on their way from the parent to her offspring lies a complex organ, the placenta, composed partly of specialized uterine tissue but mainly of elements derived from the luxuriant development of a portion of the fetal membranes—the chorion frondosum. The obstructive action of the placenta was proved by the experiments of John and William Hunter. These investigators showed that the mother's blood never enters the fetus and also that the reverse phenomenon is impossible. More recently and especially after the invention of the microscope and improvements in histological technic embryology gradually accumulated the facts which made the chapter on the morphology of the placenta intimate and nearly complete.

The architectural arrangement of this organ which receives both the fetal and the maternal circulation, yet holds them apart, is so well known that there is no longer any doubt regarding the path each of them follows. Venous blood from the fetus enters the placenta by way of the umbilical arteries which divide again and again to form a multitude of capillaries. Subsequently, these reunite into a single vessel, the umbilical vein, through which the arterialized fetal blood departs.

Chiefly by the division and subdivision of the fetal vessels in the placenta, an extensive vascular bed is created. The bed is notably enlarged by the arrangement of the smallest of these vessels which form loops hanging toward the maternal blood. With this, however, they do not come into direct contact, for the vascular loops are covered with connective tissue and this in turn with embryonic epithelium. Together with their enclosing layers of tissue the capillary loops constitute the chorionic villi. During the early months of pregnancy the epithelial covering of the villi forms two layers but later is reduced to single layer of about the thickness of endothelium. Thus, the thickness and complexity of the placental partition varies inversely with the nutritional requirements of the new organism, for at first the material requirements of the embryo are infinitesimal. Although gradually increasing, they are almost imperceptible until after the 18th to 20th week of pregnancy, and about this time also the simplification of the placental partition takes place. Therefore, it is not improbable that the anatomical transition is purposeful and intended to promote the physiological interchange between fetal and maternal circulations.

The maternal blood, which provides the fetus with what it requires for growth and coincidently removes its waste-products, enters the placenta through branches of the uterine arteries and departs through the uterine veins. As it passes through this organ, the mother's blood comes in contact with the villi and the requisite exchange with the fetal blood takes place. Certain substances pass in one direction while others are passing in the opposite direction, but all traverse the same placental partition which, as we have seen, consists in the latter half of the pregnancy of a thin covering of epithelium, a layer of connective tissue and within this the delicate wall of the fetal capillary.

How substances pass through this partition is a question answered thus far only hypothetically. There has been no lack of speculation on the subject, and, as an inevitable result, an enormous literature has accumulated. In the main two antagonistic theories have been developed; one of these, the vitalistic, assumes that the wall of the chorionic villus takes an active part in the placental interchange; the other, the mechanistic, regards this wall as a passive semipermeable membrane conforming with the laws of diffusion.

1. *The Vitalistic Hypothesis.*—That the placenta actually digests the food of the fetus was suggested by William Harvey who attempted to establish a complete analogy between the chorionic and the intestinal villi. This view gained many adherents after Hofbauer and others demonstrated the presence of enzymes in the placenta, though it was never shown that these lipolytic, diastatic, and proteolytic enzymes are agents in the placental interchange. On the contrary, it is likely that they have to do only with the living processes of the cells which contain them.

2. *The Mechanistic Hypothesis.*—In the transmission of a few substances, it has been positively proved that the placental partition plays a passive rôle and behaves as a semipermeable membrane. Thus, oxygen and carbon dioxide, we are taught by the experiments of Cohnstein and Zuntz, pass equally well from mother to fetus or in the opposite direction, always moving from the point of higher to that of lower concentration. Probably, the laws of osmosis and diffusion hold true for the placental transmission of the anesthetics, chloroform, ether, and nitrous oxide; though they do not apply to gases, like carbon monoxide, which enter into chemical combination with hemoglobin. Cohnstein and Zuntz also found that sodium chloride passed the placenta by osmosis. The evidence they obtained relative to the transmission of glucose was not conclusive, but it seemed likely that osmosis was the process concerned.

One fundamental fact regarding placental transmission was established by the experiments of Gusserow and his associates, namely, provided the placenta is normal, no insoluble substance may pass it. The former elements of the blood are confined to that circulation in which they originate; consequently, the infants of mothers suffering from leukemia present a normal blood picture. And, it is known that cinnabar, barium sulphate, and other insoluble compounds when introduced into either the mother or the fetus are effectually confined within the circulation where they were introduced. On the other hand, a variety of soluble substances when injected into the mother may later be detected in the fetus and the reverse experiment yields analogous results. From reports of such tests Kehrer stated in 1907 that of seventy-three substances examined forty-three were found to pass readily through the placenta. Many of these substances are poisonous and were selected for that reason, because a toxic action often assists in determining the result of such an experiment. Thus, strychnine, hydrocyanic acid, nicotine, curare, pilocarpine, physostigmine, phlorizine, sodium sulphate, methylene blue, and epinephrine have been demonstrated in the mother after they were injected into the fetus.

With the exception of carbon dioxide, no fetal waste product has been the subject of serious investigation. The suggestion of Halban and Fleck, that the chorionic villi elaborate an internal secretion which controls fetal excretion, proceeds entirely from theoretical consideration. "At present" we read in Döderlein's Handbuch der Gebürtshulfe (1915), "it is impossible to say more than that fetal waste products make their way to the placenta and through it reach the maternal organism which subsequently eliminates them."

Since there is so little known of the principles involved in the placental interchange and direct study of the problem by means of animal experimentation is limited by practical difficulties almost insurmountable, we turned to clinical observations in the hope of learning what is the character of the mechanism in question. We secured specimen of maternal and fetal blood simultaneously just after the infant was born. The fetal blood was obtained from the placental end of the severed cord, the maternal from one of the veins in the forearm.

The current methods for chemical analysis of the blood yield accurate results even with small specimens. Therefore, at times in a given case we were able to determine a number of the ingredients of the blood, but more frequently we were restricted to the estimation of one or two of them. Although this limitation made progress slow, it had the effect of increasing the number of cases studied and correspondingly broadened our experience. We have gathered data relative to the organic foodstuffs, protein, carbohydrate and fat, and it will be convenient to discuss these separately, in the order named, considering the waste products of nitrogenous metabolism along with the foodstuff from which they are derived.

PROTEIN.

Protein, distinguished among the foodstuffs because it contains the chemical element, nitrogen, may not be utilized directly by our tissues. Intestinal digestion breaks down protein into much simpler nitrogenous compounds, the amino acids, which are absorbed into the blood-stream and distributed to every part of the body. Thev are used both for construction and repair, and according to the organ which employs them are built into one variety of protein or another, probably of a character very different from that of the protein in the diet which originally supplied them.

Now, tissue metabolism, which is the name given the intricate and poorly understood phenomenon just referred to, has another side. As long as life lasts tissue protein is being torn down, or perhaps burned down, with the result that chemical compounds are formed which our bodies are incapable of utilizing; therefore, they are called waste products. These compounds, too, are much simpler in structure than protein though, like it, they are characterized by the presence of nitrogen in their molecules.

It follows, then, that besides certain well-known proteins our blood contains a number of simpler nitrogenous substances. Perhaps, it is fair to regard the blood protein as reserve material and to regard the nonprotein nitrogenous substances as those momentarily engaged in metabolism. The latter, as I have indicated, differ greatly among themselves, since they include both food material and waste products; but on account of a certain similarity in chemical behavior they may be estimated collectively, and when grouped in this way they are designated as the nonprotein nitrogen of the blood.

For the estimation of the nonprotein nitrogen a remarkably accurate and satisfactory method was devised by Folin. We employed it in thirty-five cases in which normal pregnancy concluded with spontaneous delivery, and found in the case of the mother an average of 25.2 mg. of nonprotein nitrogen per 100 c.c. of blood and in the case of the fetus 24.9 mg.

NONPROTEIN NITROGEN AND UREA NITROGEN OF THE BLOOD.

No.	Source	Para	N.P.N.	Urea-nitrogen	Remarks
1	Mother	I	20.2	9.3	No anesthetic.
	Fetus		20.5	8.9	
2	Mother	I	26.5	9.8	Whiffs of chloroform.
	Fetus		27.2	10.7	
3	Mother	I	21.7	9.3	Whiffs of chloroform.
	Fetus		20.0	8.4	
4	Mother	I	20.0	9.8	Deep chloroform.
	Fetus		19.0	11.7	
5	Mother	II	22.5	9.8	No anesthetic.
	Fetus		22.0	9.8	
6	Mother	II	23.5	10.3	No anesthetic.
	Fetus		20.0	8.9	
7	Mother	II	21.7	10.2	No anesthetic.
	Fetus		21.7	9.3	
8	Mother	II	21.2	8.9	Whiffs of chloroform.
	Fetus		22.5	10.3	
9	Mother	II	28.2	13.5	Whiffs of chloroform.
	Fetus		26.5	12.1	
10	Mother	II	19.5	8.4	Whiffs of chloroform.
	Fetus		19.2	7.9	
11	Mother	II	18.5	8.4	Whiffs of chloroform.
	Fetus		18.5	9.3	
12	Mother	III	26.5	10.8	Whiffs of chloroform
	Fetus		27.5	11.7	
13	Mother	IV	27.7	13.1	Whiffs of chloroform.
	Fetus		27.2	13.5	
14	Mother	V	29.7	14.0	Whiffs of chloroform.
	Fetus		24.2	13.5	
15	Mother	VIII	27.7	11.2	No anesthetic.
	Fetus		24.7	9.8	
16	Mother	IX	27.7	12.6	Whiffs of chloroform.
	Fetus		27.5	11.7	

The impressive resemblance between these figures does not depend upon the fact that they represent a mean value. The results are expressed in that form merely as a matter of convenience, for, examined individually, the cases exhibit the same equality of maternal and fetal nonprotein nitrogen. Thus, in twenty cases the results for the two organisms did not differ by more than a milligram and in the others the difference was usually less than 2 mg. The most instructive illustration of the presence of equal amounts of nonprotein nitrogen in maternal and fetal blood is afforded by a case of twins in which the former contained 30 mg. and the latter 30.2 mg. in each of the infants.

The equality of the nonprotein nitrogen in maternal and fetal blood indicates that its various constituents, belonging in part to the class of foods and in part to the class of waste products, pass freely through the placental partition. Indeed, the suggestiveness of these results goes much further. There is evidence of a regulatory mechanism which maintains the same concentration of nonprotein nitrogen in the two circulations. Such a similarity of concentration we are at a loss to explain on any other basis than that of simple diffusion. This process, as we know, permits the ready passage of certain substances through a semi-permeable membrane, and to secure equal concentrations on both sides of this partition may be said to be its very aim. However, without evidence of a more detailed character it would be hazardous to announce a final conclusion, for each of the substances concerned should be studied separately. As that has been done, we may proceed to examine the evidence as it applies individually to the amino acids, urea, ammonia, uric acid and creatinine, which together compose the nonprotein nitrogen.

AMINO ACIDS.

The amino acids are crystalline, more or less soluble compounds, which on account of these and other physical and chemical properties would be predicted to be diffusible substances. And they actually are, as Abel showed by means of collodion tubes ingeniously contrived to accommodate an artificial circulation of the blood and to arrange for the collection of substances escaping from the circulation by diffusion through the tube-wall. Other experimenters have confirmed Abel's statement that amino acids pass readily across such a permeable partition and that in general amino acids pass into the body-tissues by the process of diffusion.

Until very recently, it was not suspected that amino acids, supplied by the mother, are the material out of which fetal protein is constructed. Albumoses were thought to serve this purpose, for although they were not demonstrable in either maternal or fetal blood, they were isolated from the placenta itself. These findings were accepted in support of the view that the placenta is a digestive organ, at first breaking down maternal protein and later reconstructing the fragments into fetal protein. But this hypothesis was never entirely satisfactory and, probably, would not have been announced if at the time it were known that amino acids are abundant in the blood. The proof of this very fundamental fact wrought revolutionary changes in our conception of tissue-metabolism in general and, so far as our immediate problem is concerned, leaves no room for doubt regarding the elementary substances the mother contributes for the manufacture of protein by the new organism. At present, there is not the slightest excuse for assuming that the placenta synthesizes protein for the fetus. This function, the fetal tissues perform for themselves. The requisite material is available in the fetal blood having been acquired from the mother's blood. Of this we are sure, but how is their passage through the placental partition effected? Let us see what light blood analysis throws upon the subject.

AMINO ACID NITROGEN OF THE PLASMA.*

No.	Source	Para	Amino acid nitrogen	Remarks
1	Mother	I	5.3	No anesthesia.
	Fetus		7.0	
2	Mother	II	5.9	No anesthesia.
	Fetus		7.9	
3	Mother	III	5.3	No anesthesia.
	Fetus		7.8	
4	Mother	IV	6.5	No anesthesia
	Fetus		8.2	
5	Mother	V	7.2	No anesthesia.
	Fetus		11.9	Premature infant: 8th month.
6	Mother	I	5.6	Whiffs of chloroform.
	Fetus		7.6	
7	Mother	II	6.6	Whiffs of chloroform.
	Fetus		8.3	
8	Mother	II	4.9	Whiffs of chloroform.
	Fetus		6.8	
9	Mother	I	5.0	Morphine and tyramine.
	Fetus		6.4	
10	Mother	I	5.6	Morphine and tyramine.
	Fetus		7.3	
11	Mother	I	4.5	Low forceps. Deep chloroform.
	Fetus		6.2	

*Analyses made by A. H. Morse.

It is pertinent that the blood-corpuscles are richer in amino acids than the blood-plasma, and also that the corpuscles of the fetus are richer than those of the adult. What part these facts may ultimately play in the detailed explanation of tissue-metabolism it is impossible to predict; and I am doubtful that they have any significance for our immediate problem, since only substances in solution, substances in the plasma, take part in the placental interchange.

Furthermore, though many technical intricacies could be enumerated, it is, perhaps, sufficient for our purpose to state that no analytical method at hand includes all of the numerous amino acids in the blood. The method devised by Van Slyke takes most of them into account and this was the procedure used by Morse whose results are given in the accompanying table.

An excess of amino acids amounting to 2 mg. of nitrogen appears uniformly in favor of the fetal plasma. Small as it is, such a difference in concentration implies the addition of some process to that of simple diffusion in the regulatory mechanism of the placenta. Similar results in connection with the passage of amino acids into other tissues led Van Slyke to give the name "absorption" to the phenomenon. This author found when amino acids were injected into the circulation that they diffused into the tissues rapidly and an equilibrium was reached when the tissues contained about ten times as much amino acid nitrogen as the plasma. While equilibrium between maternal and fetal blood is obtained with only a slight difference between the concentrations of amino acids in the two circulations, the results indicate that the placenta absorbs these substances and also prevents their departure from the fetal circulation.

NITROGENOUS WASTE PRODUCTS.

The substances which arise when protein is utilized by the fetus, so-called nitrogenous waste products, are ultimately eliminated by the maternal excretory organs, chiefly the kidneys. This provision for their disposal requires that they be transferred through the placenta from fetal to maternal circulation. And, provided the pregnancy is normal, equivalent concentrations of all these substances prevail on both sides of the placental partition. Such findings would be expected only if the placental exchange was effected by diffusion.

Urea, the most abundant of the nitrogenous waste products, is so readily diffusible that its concentration in the blood-plasma, the corpuscles and the tissues of our bodies is always the same. Consequently, before the facts were actually determined, it would have been a safe prediction that identical quantities of urea per unit volume of blood would be found in both organisms. Our observations verify this prediction, for in a series of 16 normal cases the results gave an average of 10.5 mg. of urea per 100 c.c. of blood for the mother and 10.4 mg. for the fetus. Furthermore, in the presence of complications like nephritis where relatively large quantities of urea occur in the maternal blood identical values obtain in the fetal blood. The evidence, then, is conclusive that the placenta takes no active part in the elimination of fetal urea and behaves as a semi-permeable membrane.

URIC ACID OF THE BLOOD.*

No	Source	Para	Uric acid	Remarks
1	Mother	I	6.8	Chloroform.
	Fetus		5.0	
2	Mother	I	4.8	Chloroform.
	Fetus		4.5	
3	Mother	I	4.3	Chloroform.
	Fetus		4.3	
4	Mother	I	8.0	Chloroform.
	Fetus		8.1	
5	Mother	I	5.9	Chloroform.
	Fetus		5.6	
6	Mother	II	2.3	No anesthesia.
	Fetus		2.5	
7	Mother	II	1.8	Chloroform.
	Fetus		1.8	
8	Mother	III	2.2	No anesthesia.
	Fetus		2.0	
9	Mother	III	3.0	Chloroform.
	Fetus		3.3	
10	Mother	IV	2.0	Chloroform.
	Fetus		2.7	
11	Mother	V	2.2	No anesthesia.
	Fetus		2.4	
12	Mother	X	2.8	No anesthesia.
	Fetus		2.2	

* Analyses by L. J. Bogert.

TOTAL CREATININE OF THE PLASMA.

Author	Mother	Fetus	Number of cases
Hunter and Campbell...	1.67	1.75	18
Plass................	1.70	1.73	12

As the method we employed to determine the quantity of urea includes the ammonia which is present in the blood in extremely small amounts, the analytical results just referred to are doubly significant. They make it certain that ammonia as well as urea passes through the placenta by diffusion. That the same explanation holds also for uric acid is plain from our own figures in the adjoining table and these are confirmed by the results of Kingsbury and Sedgwick. Finally, the evidence regarding creatinine and creatine which have been studied by Hunter and Campbell and by Plass agrees perfectly with the conclusions just reached. Therefore, we are confident of the passive rôle of the placenta in the transmission of all the nitrogenous fetal waste products. They enter the maternal circulation as freely as if the placenta did not exist, and ordinarily the estimation of the quantity of them in the mother's blood holds equally valid for the blood of the fetus.

BLOOD-SUGAR.

Carbohydrate, the second of the organic foodstuffs to be studied, becomes available for intermediary metabolism in the form of glucose, the blood-sugar. An excellent method for its determination devised by Benedict was the one Morriss employed in our series of cases. For the mother, the mean value found was 0.132 per cent. and for the fetus 0.115 per cent. Slightly higher values occurred in the maternal blood in nineteen out of twenty-four cases while the values were identical in both circulations in five cases. Bergsma has stated that the sugar-content of the blood in the two organisms is always the same. But his work is open to criticism, for the specimens were not obtained simultaneously, between them at times there was an interval of twenty minutes.

These facts do not support a hypothesis requiring the action of an enzyme. Such a doctrine, advocated by Hofbauer, rests chiefly upon his demonstration of glycolytic ferments in glycerine extracts of the placenta. In all probability their function is the preparation of glycogen, stored in the decidua, for passage to the fetus. The results of blood analysis certainly do not indicate that enzymes effect the transmission of glucose through the organ. On the contrary, they speak strongly against it. Thus, in a case of double-ovum twins, where each fetus had its own placenta the blood-sugar of one was 0.099 per cent. and of the other 0.096 per cent. while that of the mother was 0.12 per cent. Such findings are inexplicable except on the basis of diffusion through the placenta; slightly higher maternal values promote a steady flow of glucose toward the fetus. This fact intimates that glucose plays a prominent rôle in fetal metabolism, a rôle not fully appreciated until viewed in the light of the fat-content of the blood.

PERCENTAGE OF SUGAR IN THE WHOLE BLOOD.*

No.	Source	Para	Blood-sugar, per cent.	Remarks
1	Mother	I	0.143	Whiffs of chloroform.
	Fetus		0.124	
2	Mother	I	0.097	Morphine and tyramine.
	Fetus		0.10	
3	Mother	I	0.161	Morphine and tyramine.
	Fetus		0.131	
4	Mother	I	0.137	Whiffs of chloroform.
	Fetus		0.141	
5	Mother	I	0.125	Whiffs of chloroform.
	Fetus		0.108	
6	Mother	I	0.155	Whiffs of chloroform.
	Fetus		0.112	
7	Mother	I	0.142	Whiffs of chloroform.
	Fetus		0.106	
8	Mother	I	0.155	Whiffs of chloroform.
	Fetus		0.124	
9	Mother	II	0.126	No anesthesia.
	Fetus		0.11	
10	Mother	II	0.156	Whiffs of chloroform.
	Fetus		0.124	
11	Mother	II	0.146	Whiffs of chloroform.
	Fetus		0.108	
12	Mother	II	0.115	Whiffs of chloroform.
	Fetus		0.103	
13	Mother	II	0.112	Whiffs of chloroform.
	Fetus		0.086	
14	Mother	II	0.11	Whiffs of chloroform.
	Fetus		0.075	
15	Mother	II	0.125	Whiffs of chloroform.
	Fetus		0.101	
16	Mother	III	0.105	No anesthesia.
	Fetus		0.096	
17	Mother	III	0.126	Whiffs of chloroform.
	Fetus		0.105	
18	Mother	IV	0.172	Whiffs of chloroform.
	Fetus		0.122	
19	Mother	IV	0.124	Whiffs of chloroform.
	Fetus		0.095	
20	Mother	IV	0.126	No anesthesia.
	Fetus		0.094	
21	Mother	V	0.132	Whiffs of chloroform.
	Fetus		0.112	
22	Mother	V	0.126	No anesthesia.
	Fetus		0.13	
23	Mother	VI	0.089	Whiffs of chloroform.
	Fetus		0.06	
24	Mother	VIII	0.185	Whiffs of chloroform.
	Fetus		0.185	

*Analyses made by W. H. Morriss.

FATS AND LIPOIDS.

From a long series of observations we obtained analytical results of a constant character which is illustrated by the cases in the table. The fats and lipoids are more abundant in the maternal blood and relatively large maternal values have large fetal values associated with them; otherwise, the most notable feature of our findings is the disparity between the quantities of fat and lipoids in the two circulations, and beyond this fact no constant relationship is observed. In the plasma the disparity is equally obvious. It is so great a difference that we may not entertain the possibility of fat passing through the placenta in a way comparable with that found applicable to other substances. For such results two alternatives come to mind; either the fats and lipoids cross the placenta with the aid of an enzyme, or they do not cross at all. Although our data would accord with either explanation, leaving the question open, there are at hand observations of a very different kind which decide the matter and teach that the latter interpretation is correct.

FATS AND LIPOIDS.*

Whole Blood.

No.	Source	Fats	Cholesterol			Lecithin	Remarks
			Total	Esters	Free		
1	Mother	1120	280	115	165	350	Whiffs of Chloroform.
	Fetus	790	170	20	150	260	
2	Mother	885	255	110	145	355	Whiffs of chloroform.
	Fetus	675	160	35	125	250	
3	Mother	940	225	145	80	245	Whiffs of chloroform.
	Fetus	775	125	25	100	175	

Plasma

No.	Source	Fats	Total	Esters	Free	Lecithin	Remarks
1	Mother	1240	300	180	120	270	Whiffs of chloroform.
	Fetus	840	180	30	150	200	
2	Mother	945	260	160	100	280	Whiffs of chloroform.
	Fetus	715	170	40	130	200	
3	Mother	960	260	180	80	240	Whiffs of chloroform.
	Fetus	780	95	10	85	115	

*Analyses made by H. J. Stander.

Following the investigations of Hofbauer and of Gage, Mendel and Daniels resorted to vital staining and employed Sudan III, which colors fat red. The animals used, pregnant rats, were treated by injection of the dye into the maternal circulation. Invariably, as these investigators find, the maternal fat is stained but not the fetal. Between the tissue affected and that not affected by the dye the line of demarcation in the region of the placenta is very sharp. Stained fat cannot be traced in transit through the organ and there is no staining of the fetal fat. Now, these observations, especially in conjunction with the disparity we find between the amount of fat in the blood ~~and~~ of the mother and that of the fetus demonstrate in a convincing way that fat is not included among the materials contributed by the parental to the new organism. The fat in the body of the fetus is manufactured there, and, almost certainly manufactured from carbohydrate. This view harmonizes with the arrangements made for supplying the fetus abundantly with glucose, for the maternal blood-sugar, you will recall, encounters no obstruction in the placenta as it passes toward the fetus. A variety of facts, therefore, support our conclusion that the fats and their derivatives, the lipoids, do not pass the placental partition, or, in other words, take no part in the placental interchange.

Without certain reservations, we may not infer that what has been found true for the placental interchange at full term is equally true for the early months of pregnancy, a time when the thickness and complexity of the wall of the chorionic villi are notably greater than at a later period. The simplification of the placental partition occurs at about the 18th to 20th week of pregnancy and with it is associated the beginning of a more rapid rate of fetal growth. At least, during the latter half of pregnancy, the placental partition behaves as a semi-permeable membrane. Thus, the amino acids from which the fetal protein is built and glucose which supplies the requisite energy for tissue-construction pass freely to the new organism. While in the mother's blood these substances are not more accessible to her own tissues than to those of the fetus; and, probably, the quantities which reach the new organism are regulated chiefly by the rapidity of their utilization in its tissues. Probably, the supply of water and of most, if not all, the inorganic salts including those of calcium, magnesium, sodium and potassium is regulated on the same basis. With regard to iron, at present, it is impossible to affirm what arrangements are made for its transportation through the placenta. This fascinating but intricate and unsolved problem has a singular position among the factors of fetal nutrition. Stored in the newly born infant there are large quantities of iron, so large that the quantity is proportionately greater than in the adult. The purpose of this storage, Bunge believes, is in the nature of a compensation for the inadequate amount of iron in human milk.

The fats and lipoids of the mother's blood, as we have seen, are held in check by the placenta, and the fetus manufactures these substances out of some other material, probably glucose contributed by the mother. The manifest difference between maternal and fetal blood in this respect stimulates our curiosity in regard to the fat-metabolism of pregnancy, and this is further aroused by current interest everywhere in the nutritional rôle of cholesterol and lecithin. The purpose and fate of these lipoids, physiologists have not made out satisfactorily, even with regard to animal metabolism in general. But, tempting as speculation is, at the moment we may go no further than the facts of a high fat-content in the blood of the pregnant woman and a much lower one in the blood of the fetus.

All the fetal waste products including carbon dioxide, which was the first to be thoroughly studied, pass through the placenta in accord with the laws of diffusion. Active elimination of these substances on the part of the mother's excretory organs maintains their proper concentration in her blood, and along with this proceeds a steady purification of the blood of the fetus. Less favorable conditions prevail in cases of nephritis and of organic cardiac disease when an unusually large amount of excretory products appears in the mother's blood; and simultaneously, as we have found, in the blood of the fetus. It is not unlikely, therefore, that intrauterine death in the presence of these maternal complications may be explained on the basis of inefficient removal of fetal waste.

In the final analysis, the nutrition of the fetus involves two factors, namely, the peculiar activity of its own organs and the supply of food they receive. The first is the more fascinating, and also the more difficult of study because the isolation of the fetus baffles the most ingenious experimenters. In the absence of specific knowledge regarding the intermediary fetal metabolism our nearest approach to the facts is to accept its analogy with adult nutritional processes. And yet in doing so we are conscious of not being logical, for the unusual prominence of certain organs, as the thymus gland, intimates the existence of radical differences between the metabolism of the immature organism and that of the adult.

The second factor dealing with the origin and the variety of materials incorporated in its body has been brought within the range of direct observation, and certain familiar deductions therefrom have a practical application. Thus, there is no diet specifically adapted to the state of pregnancy; the prospective mother may exercise the same freedom as anyone else in the selection of food. She should, however, choose what will agree with her and avoid that which she cannot digest and assimilate. Personal experience in the main must guide every one as to what to eat and most women follow the dictates of appetite after they become pregnant as safely as they did before.

In a practical sense the quantity of the mother's food is more influential than its quality. Popular opinion holds that during pregnancy the mother "should eat for two." This doctrine is erroneous. A diet which has previously been ample will likewise be sufficient throughout pregnancy. And, it is not unimportant to emphasize this view, which has the unqualified support of painstaking, scientific investigations, because overeating during pregnancy is much more likely to provoke discomfort than insufficient nourishment. On the other hand, there can be no justification for measures intended to restrict the growth of the fetus, for when rigidly carried out they tend to weaken the mother. She may be careful, in other words, to avoid overgrowth of the fetus but should not adopt a diet so limited as to interfere with normal development. So long as her health is properly maintained no thought may be given as to what the size of the fetus is likely to be. At present, provided the physician determines by a thorough, preliminary examination the existence of any disproportion between the size of the fetus and the capacity of the mother's pelvis, he is qualified to decide what the appropriate treatment should be in order to bring pregnancy to a successful termination.

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TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of May 13, 1919.

The President, DR. L. GRANT BALDWIN, *in the Chair.*

DR. H. N. VINEBERG presented a report of a case of

CHORIOEPITHELIOMA, DEVELOPING FIVE WEEKS AFTER A HYDATIDIFORM MOLE.

Mrs. A. S., aged thirty years, married nine months, consulted me March 14, 1919. Menses began at fourteen years, four weekly type, duration four to five days, amount moderate, no marked pain. No pregnancy excepting the present. Her last normal menstruation occurred January 1st. Had a slight show January 7th, none then until February 23d. From that date until the dav before she consulted me there had been a steady flow varying in amount, but usually slight and only occasionally profuse. There was considerable pain in the lower abdomen, chiefly in the left lower quadrant.

She was a large healthy looking woman with no evidences of anemia. Family history not relevant. On bimanual examination the uterus was found enlarged to the size of the gravid organ at about the fourteenth week, cervix soft but closed, a slight darkish discharge from the os. No colostrum in the breasts. The diagnosis was made of pregnancy, with threatened miscarriage. March 19th patient came again to the office stating that she had had a profuse flow of blood the night before. Finding the cervix still closed and the uterus enlarged out of proportion to the duration of the pregnancy I had no hesitation now of making the diagnosis of a hydatidiform mole and advised immediate emptying of the uterus. This I did the same afternoon at the Flower Hospital, employing as I usually do in hydatid moles a vaginal anterior hysterotomy. I emptied the uterus manually of a large quantity of vesicles, which were of rather small size. There were no traces of any normal placental tissue or of a fetus. I palpated the entire uterine interior with my fingers and found no growth, nor any abnormal thinning of the wall at any one area.

The wound in the cervix and lower uterine segment was sutured in the usual way. The patient left the hospital a week later on March 26th, with the uterine wound nicely healed and the uterus well involuted.

She was instructed that if she had any profuse flow of bood at any time to report at once and in any case to return for examination in a couple of months. On April 24th just five weeks after the uterus had been emptied the patient was suddenly seized with a violent hemorrhage, she notified me at once. As she was living far up in the Bronx I advised her to send for another physician living in her neighborhood, and have him pack the vagina tightly with gauze, and then to go to the Flower Hospital. This advice she followed.

I learned from her that since she left the hospital she had no show of blood until the hemorrhage that morning. I found the uterus considerably enlarged and very hard to the feel. I unhesitatingly made the diagnosis of chorioepithelioma and advised hysterectomy without further delay. I performed panhysterectomy the next morning.

The patient made an uneventful recovery and left the hospital later. The uterus was nearly double the normal size with very thick firm walls, and on cutting it open a small growth about the size of an almond was found in the posterior wall near the fundus. It was a specimen of an early growth of chorioepithelioma as the report of the pathologist, Dr. F. S. Mandelbaum of Mt. Sinai Hospital, demonstrates.

The uterus in the case of Mrs. S. is 11 cm. in length and the wall 3 cm. in thickness. In the cavity near the fundus is a nodular, somewhat polypoid tumor, about 2 cm. in diameter, purplish in color, slightly friable in nature, and infiltrating the wall at this situation.

Microscopically, the tumor is composed of large branching masses of multinuclear cells mingled with areas of actively growing Langhans' cells. The syncytial cells in some places cover the masses of Langhans' cells, but in most situations this relationship is lost and the multinuclear cells are seen deeply invading the muscularis and lying loosely in some of the sinuses.

The picture is typical of a malignant tumor, chorioepithelioma, with extensive infiltration of the uterine wall.

Every case of chorioepithelioma is of interest and is deserving of record but this one is of particular interest. (1) In that it furnishes incontrovertible evidence of the short period that may elapse between the removal of the hydatid mole and the development of the growth.

In the many cases on record of a hydatidiform mole being followed shortly afterward by a chorioepithelioma the evidence is not conclusive that the growth may not have been coexistent with the mole but escaped detection by the usual method of removing the hydatid mole with a curet or placental forceps. The only reliable procedure of eliminating this contingency is when the hand and fingers are used to remove the vesicles and to thoroughly explore the entire uterine cavity as was done in this instance. (2) It furnishes confirmation of the correctness of the principle laid down by me in a paper on "Clinical Data on Chorioepithelioma" read before the American Gynecological Society last year.

It was to this effect: In the event of a very profuse hemorrhage, occurring shortly after a hydatidiform mole had been thoroughly removed by the fingers or hand and the inner uterine walls palpated with negative results, a diagnosis of chorioepithelioma may confidently be made and the uterus removed at once, without exposing the patient to the further risks and dangers involved of spreading the growth and causing metastases by a curettage for diagnostic purposes. In studying the literature for my paper I found several instances on record in which the fatal result was unmistakably due to the loss of valuable time and the dangers comprised in performing one or more curettages in order to reach a diagnosis.

DISCUSSION.

Dr. J. O. Polak.—"Did I understand Dr. Vineberg correctly that he proposes in a given case of hydatid, on which he has done a vaginal hysterotomy and emptied the mole through the hysterotomy wound, and feeling satisfied that the content of the uterus is removed, if at any time in the course of two, three or four months hemorrhage should take place, to remove the uterus without curettage and pathological examination of the curetments? Is that so?"

Dr. H. N. Vineberg.—"Yes."

Dr. J. O. Polak.—"Every one is not as good a diagnostician as Dr. Vineberg and I should feel that it would be indeed unfortunate that such a statement as that should go out from this Society, and while I believe that what the doctor says is so in a large number of cases, I should hesitate to say that that was the proper procedure, as I am very sure it would cause the loss of a large number of uteri in which chorioepithelioma was not found. There is a large number of these cases where we have, following labor, following hydatid, following miscarriage, an extrusion of intramural fibroids which do cause hemorrhage very similar to this, with enlargement of the uterus, and while I believe fully that the general principle that the doctor has laid down is true, namely, that every hemorrhage following a case of hydatid should be considered as caused by a probable chorioepithelioma, I believe we must have some step in between such radical teaching, and I cannot be quite as radical as the doctor was in this case, although here he has demonstrated the logic of his attitude and the truth of his statement in this case and in the others reported before the American Gynecological Society."

Dr. Howard C. Taylor.—"May I ask the age of this patient?"

Dr. H. N. Vineberg.—"Thirty years."

Dr. H. C. Taylor.—"It seems to me that the age of a patient and the value of the uterus to the patient should influence us in deciding the course to follow in these cases. If the patient were forty years of age, or if she had the number of children she wanted, personally I would prefer to do a hysterectomy for a hydatid mole. A hysterectomy is probably associated with less risk than the emptying of the uterus for hydatid mole and the chances of a chorioepithelioma developing are avoided."

Dr. G. L. Brodhead.—"Some years ago at Gouverneur Hospital a patient came in with hydatid mole and when she was discharged from the hospital, she was told to report again if there was any bleeding. A month or two later she came back with a history of bleeding. A curettage was done and the specimen sent to Bellevue and it was reported to be a chorioepithelioma, and the uterus was accordingly removed. The uterus was found to be apparently a perfectly normal uterus although it was not subjected to microscopical examination."

Dr. W. M. Ford.—"May I ask Dr. Vineberg whether there was any evidence of lutein cysts in his cases of chorioepithelioma? I think he said nothing about that."

Dr. H. N. Vineberg.—"No."

Dr. W. M. Ford.—"In two of my cases they were present to a large degree. There was no evidence of them in the specimen, but the walls were so thin in the cases which I have seen that they might have very well disappeared and ruptured."

Dr. L. W. Strong.—"It does sometimes occur that curetings lead to a mistaken diagnosis, or mistaken opinion in regard to malignancy, and sometimes the appearance is very suggestive, and yet when the uterus is removed there isn't any residue remaining. It also does occur that after the uterus is removed the metastases disappear spontaneously and even in instances where there has been a suspicion of slipping off of the cells into the general circulation, those have been known to retrogress. It is hard to make a positive statement as to how a malignant case will be."

Dr. Hiram N. Vineberg.—"I think any one who has seen one of these cases bleed as I have seen three of them bleed, appreciates what it means. One practically never sees such a hemorrhage from any other condition or growth. This patient would have bled to death if she had not been packed tightly. So I say in a case like that you had better go ahead and take out the uterus without delay. Curettage as a diagnostic measure is not reliable. I lost a case where the pathologist was mistaken in his diagnosis. I do not think it is at all a radical position to take, because a good many men take the position now that given a hydatid mole, no matter what the age of the patient may be, a hysterectomy should be done. I do not claim that. I believe after a hydatid mole has been thoroughly emptied and you know there is nothing in the uterus, if she gets a hemorrhage, such as this woman did and the other two cases did, I would unhesitatingly take the uterus out without further ado.

"As to the question of the follow-up: I don't think there would be much gained in any instance of hydatid mole to follow it up any sooner than there were symptoms presenting. If the patient had returned in two weeks instead of five, I might have found the uterus slightly enlarged, but I wouldn't feel justified in making a diagnosis because the uterus was slightly enlarged. It is entirely different here than it is in your follow-up system after removing a carcinoma of the uterus. The cervix is closed, and there is nothing to go by except the fact that the uterus might be slightly enlarged.

"In reference to the case reported here by Dr. Geist: The interesting point in this case, of course, is that here with a hydatid mole, without any fetal elements, that you should have such profound toxemia. I had a case some years ago in a young woman in her first pregnancy who had a hydatid mole at the fourth or fifth month with the most profound toxemia, with repeated convulsions. In that instance I emptied the mole and emptied the uterus and she recovered. Those cases are rather rare. I think there are only a few cases which have been reported in which profound toxemia occurred with hydatid mole."

DR. SAMUEL H. GEIST described a case of

HYDATIDIFORM MOLE ASSOCIATED WITH PERNICIOUS VOMITING.

The case I wish to present is of interest because it illustrates a variation in the development of the placental villi which abnormality may in its further growth become a most malignant tumor as illustrated in the case presented by Dr. Vineberg.

It is also of special interest because of the clinical picture presented. Persistent vomiting associated with pregnancy is not so uncommon but a type of vomiting so pernicious that it results in acidosis and death especially when combined with a pathological pregnancy makes the case instructive and interesting. Several years ago I presented before the society a case of pernicious vomiting associated with a very early unruptured ectopic gestation which was immediately relieved when the pathological condition was operatively removed.

This particular case that I am presenting to-night did not have so fortunate an outcome. The patient, Mrs. B. H., fifty years of age and married, was admitted on April 5 to Dr. Brettauer's service at Mount Sinai Hospital. She was married for twenty-eight years, had three children, the last eighteen years ago. She had her last regular period ten weeks before admission. After six weeks amenorrhea she began to bleed slightly. This continued for about three weeks then stopped. For the past two weeks there has been constant vomiting but no other symptoms. While the patient was in the hospital she had what was apparently normal menstrual period lasting four days.

Physical examination showed a well-nourished woman normal except for the local condition. Locally she presented on bimanual examination a soft, patulous cervix with a mucopurulent discharge. The uterus was enlarged to about the size of four months' pregnancy, irregular, nodular and hard. The adnexal regions were normal. A diagnosis of fibroids with possible pregnancy was made. Examination of patient's urine showed a marked amount of acetone and diacetic acid present. She was then transferred to the medical service for treatment of the acidosis and after being under observation for several days was returned to gynecological service. The condition was not improved. There was no other cause ascertainable to account for the pernicious vomiting and acidosis other than the uterine condition, and as the patient was losing ground, operation was decided upon. A supravaginal hysterectomy under gas anesthesia was performed and the specimen which is to be presented was removed. It represents a fibroid uterus containing a typical hydatidiform mole. It is of interest also to note the absence of luteal cysts in the ovaries which are so commonly associated with this condition. Following operation there was some slight improvement for a few days after which the patient relapsed into her former condition. She could not retain anything by mouth or rectum and in spite of subcutaneous infusions of glucose rapidly lost ground and died five days after operation.

Clinical examination showed a normal blood pressure 130–80. Normal blood count. Chemical examination of blood showed a slight incoagulable nitrogen retention 70, and a slight increase in the CO_2 retention in the plasma.

I have nothing to add in reference to the case here presented, except to say that, as far as the question of the frequency or the association of chorioepithelioma with hydatid goes, some statistics were published by Gebhardt of 16,000 pregnancies with twelve hydatid moles which were followed over a period of four years and none of them developed chorioepithelioma.

Dr. Geo. L. Brodhead reported a case of

PREGNANCY COMPLICATED BY FIBROID WITH NORMAL DELIVERY AND SUBSEQUENT MYOMECTOMY.

Mrs. M., a negress, aged thirty, was admitted to my service at the Harlem Hospital on October 12, 1917, giving this history: Fourteen years before she had been operated upon for the removal of a left cystic ovary. Her last menstruation was April 11, 1917. In June, 1917 a physician told the patient she was six months pregnant, though she was only at that time two to two and one-half months pregnant, and another physician told her she would be confined in August. On admission to the hospital October 12th, there was found a tumor, apparently fibroid, of the size of a five months' pregnant uterus, somewhat oblong in shape, occupying the right half of the umbilical region and the left half of the right lumbar region. The upper border of the growth was just below the costal margin, and the lower border extended down into the right iliac fossa. A definite sulcus exists between the tumor and the six months' uterus, which was pushed well over to the left. The tumor was solid in consistency, regular in outline, not contractile, freely movable, not attached to the overlying tissues, and apparently attached to the uterus. Two weeks after admission the tumor was very tender to superficial and deep palpation, and an ice-bag was applied with great relief. With the growth of the pregnant uterus the tumor was pushed upward and to the right. The patient was closely observed, and was allowed to proceed to term, and on January 8, 1918, a 7-pound female child in good condition was delivered normally. After waiting forty minutes for the expulsion of the placenta, the latter which was found to be slightly adherent, was extracted manually. The placenta was partly above, and partly below a contraction ring, but was easily removed. Two-thirds of the chorion were retained.

After the birth of the child, and before the placenta was extracted, the uterus was at the navel, and the tumor filled the right hypochondriac and right lumbar region. The mass measured 7 to 8 inches in the transverse, and 4 to 5 inches from above downward. There was only moderate bleeding, and the uterus contracted well. On January 10, 1918, at 10 A. M. the tumor was very tender, and the woman looked sick, temperature 101° F., pulse 140, respiration rapid and shallow. The mass was apparently attached to the uterus by a thick pedicle. At 6 P. M. the tenderness had increased, and at 10.30 P. M. laparotomy was performed. A median incision was made, and a large fibroid, the size of a five months' uterus was removed from the posterior wall of the fundus of the uterus, with eight smaller fibroids varying in size from a marble to a lemon. The patient made an uninterrupted recovery, and left the hospital with the baby in good condition. Against the advice of some of the staff who saw the woman earlier in the pregnancy to operate at once, the writer believed that the patient might go safely to term. Conservatism should be the rule when considering fibroid in pregnancy, and by careful observation, and if necessary, prompt interference, children can often be saved, whereas by a more radical procedure, pregnancy is unnecessarily interrupted.

DR. R. T. FRANK.—"It seems to me that we have to individualize in a given case. While I heartily agree with Dr. Brodhead that in most instances you can allow the pregnancy to go to term and that labor will go on undisturbed, there are two elements which play a rôle. One is the situation of the fibroid. If it is pedunculated and out of the way, or if it seems to be freely movable, it almost invariably rises out of the pelvis during delivery, but if you have a case such as I operated upon five days ago, where the growth is intraligamentous and the cervix is pushed above the brim of the pelvis, it is unwise to leave such a case undisturbed.

"In the second place, whenever the tumor is of such size and so rapid in its growth that the abdominal mass becomes unwieldy early in pregnancy, it is unlikely that the pregnancy will go to term; and, finally, I have, as many others have done, in a number of instances, removed fibroids during pregnancy for one reason or another, and in one special instance which I recall, where I had to go right down to the membrane so the fetus could be seen shining through, the pregnancy went to term undisturbed. Therefore, although conservatism should be practised and taught it is impossible to lay down hard and fast rules."

DR. AUSTIN FLINT.—"I am glad that a note of conservatism has been sounded in discussing gynecologic-obstetric conditions. I think that in fibroids with pregnancy there is none of us skilful enough to know just what to do. My own experience has been that the majority of cases of fibroid in pregnancy are absolutely harmless. A great many of the cases in which we anticipate complications and are afraid something dreadful is going to happen, go on without any complications. From the standpoint of conservatism, I think that in a case of doubt the proper thing to do is to leave them alone, with always the reservation that interference can be made at any time. I think that is the proper routine and Dr. Brodhead's case, which is interesting to me, I think bears that out. Interference is, of course, sometimes necessary from the size of the fibroid and the compression which it causes."

Dr. R. H. Pomeroy.—"In my earlier days I accumulated quite a number of cases in which I operated on a combination of fibroids and pregnancy. I reviewed some eight or ten of them a few years ago. I decided that I made a mistake in every one of them or committed an error of judgment in all of them. They were an accumulation of cases in which the people concerned had lost their only chance to have a child, and while they may have technically forgiven me, I don't think they felt quite happy about it. My later experience has been such that it indicates to me that it is better not to interfere or do a hysterectomy in the early months of pregnancy."

Dr. Lawrence W. Strong reported a case of

CARCINOMA OF THE OVARY IN A GIRL OF TWENTY.

The specimen exhibited was a large solid carcinoma of the ovary which measured 27 by 19 by 13 centimeters, and unlike the usual carcinomata of the ovary was not associated with any form of cyst. The microscopic appearance showed solid alveoli of cells without glandular arrangement. There was extension into the adherent tube, the plicæ being entirely converted into carcinomatous alveoli except for their covering epithelium which remained intact in a thin sheet over the carcinoma. The tumor may be regarded as an embryonal carcinoma, though that term is rather vague.

DISCUSSION.

Dr. R. T. Frank.—"As far as the tumor itself is concerned, a solid carcinoma of the ovary of the usual type would be rather rare, extraordinary even, in a woman of twenty years. On the other hand, teratomata which have developed along certain lines, such as a carcinoma or sarcoma, or a mixture of the two, are common and are more frequent in the young than in the old. From the one section, of which I saw a picture, this suggestion seems to be justified as the most likely diagnosis."

Dr. H. N. Vineberg.—"As far as the age is concerned, I find from my records that in 1914 I operated on a young girl about twenty or twenty-one years of age, who came to me with her mother, and the mother was in great distress because every one looked upon her daughter as being pregnant, and she looked as though she might be pregnant nine months. It was easy enough to determine that the uterus was not involved. It was a large tumor of the ovary. I removed the tumor, which was very large, one-third being cystic and two-thirds solid. Examination was made by a good pathologist at the time and it was pronounced as an adenocarcinoma of the ovary. That girl married afterward and had a child two or three years later, and I heard of her for about eight or nine years and then lost track of her, so I do not now know what has become of her. I had another case of carcinoma of the ovary in a young woman who was free from metastasis until about fifteen years later (I think I reported this case), when she came to me with a large tumor, which proved to be a carcinoma of the other ovary."

Dr. Emil Schwarz.—"The case is unique as a carcinoma because such solid tumors are rather infrequent. Serous papillary carcinomata which become secondarily solid are often found in young individuals. But the cell type found in Dr. Strong's tumor shows a complete anaplasia which is decidedly rare. There is a possibility that it is a teratoma with one-sided development of a single cell type, or a carcinoma with complete lack of differentiation of the cells. The question whether it is congenital or not requires further study. Carcinomata such as are found in young girls usually show nodular metastases on the peritoneum. The tumor in question showed an infiltration of the stroma of the tubal plicæ with carcinoma cells which probably spread along the central lymphatics of the plicæ.

"Another remarkable fact about this tumor is that it did not cause metastases by contiguity on the peritoneum, as is usually the case, but spread through the mesoövarian fold into the tube without showing any surface papillations on the ovary or on the intestinal peritoneum."

Dr. Charles G. Child, Jr., read a paper entitled

COEXISTENT DISEASES OF THE APPENDIX AND PELVIC ORGANS IN THE FEMALE.

(For original article see page 31, July, 1919, number.)

DISCUSSION.

Dr. Joseph Brettauer.—"I agree with every one of the six points laid down by Dr. Child, with the exception of one, and that is the point of *always* removing the appendix when opening the abdomen. There are times when your operation upon the pelvic organs is sufficient for any patient and it is not desirable or wise to add anything which is not necessary as you want to shorten the time of exposure, and while it is true that the removal of the appendix only takes a few minutes more, at the same time, no matter what method you employ, you have another possible source of postoperative complication.

"As far as the appendix being the causative factor in many right-sided adnexal diseases there cannot be any doubt. I have a good many cases on record where I am positive that a diseased and adherent appendix caused an ovarian abscess."

Dr. J. N. West.—"It has been my habit in recent years to remove the appendix in every case where I open the abdomen and can conveniently get at it, except in cases where it is necessary to shorten the operation as much as possible: then, unless the appendix seems particularly to be diseased, I do not remove it, but every time that the patient seems to be in good condition and the appendix is easily reached, I remove it."

Dr. F. C. Holden.—"I agree with what Dr. Brettauer said in regard to the removal of the appendix, except to say that I never think of taking out the appendix in a case of ectopic gestation."

Dr. Howard C. Taylor.—"In the last two years I operated on a girl of seventeen or eighteen, the daughter of a physician, who was operated by a surgeon when she was about three months old, for an acute appendix. That girl at the time I operated on her had a hydrosalpinx. The hymen was unruptured and there was no other apparent source of infection except the appendicitis. In other words, I think that it is surely a case of hydrosalpinx from the appendicitis which the girl had when she was about three months old. The tube and ovary on the other side were normal.

"There is another gynecological condition which I feel frequently results from an acute appendicitis, namely, retroversion of the uterus. I think we have conditions which theoretically would lead to a retroversion. With acute appendicitis there is more or less inflammation in the pelvis; the patient being weakened by her condition and lying flat on her back, the uterus tends to drop back and to become adherent.

"I remember a discussion of a paper a year or two ago by a general surgeon, on the results of operation for chronic appendicitis. There were three points brought out in that discussion which were particularly striking to me. One was the large number of poor results. I think that in almost a third of the cases it didn't relieve the right-sided pain by removing the appendix. The second point was the fact that the laboratory reports of the cases that were removed for chronic appendicitis showed about the same number of cases of diseased appendices as in a corresponding number of appendices removed as a routine in gynecological operations. And the third point was the one Dr. Child pointed out, namely, the few cases in which the surgeon makes a gynecological examination either before or during the operation for so-called chronic appendicitis.

"As regards the removal of the appendix during operation for other conditions, I think we all agree with Dr. Brettauer and Dr. Holden that we would not do it as a routine in every case. My impression is that that was Dr. Child's own idea."

Dr. Charles G. Child, Jr.—"I did not mention in the summary the fact that the removal of the appendix should be done only if the condition of the patient was such that it justified it or warranted it."

Dr. Howard C. Taylor.—"It is my custom to remove the appendix regularly if the patient is complaining of right-sided pain. It is not possible to exclude the appendix as a cause of right-sided pain even by direct examination."

Dr. Florian Krug.—"I wish that Dr. Child had brought out in the statistics the number of cases that he operated where previously the universal surgeon (I think the term universal surgeon is a good one) had made a lateral incision to remove the appendix, where he cured his patients afterward by going in in the median line and doing the amount of surgery which was necessary on the pelvic organs.

"I haven't the statistics at hand, but I have operated on a great number of cases and I have been able to cure them, too, where they had scars which the universal surgeon had made on the right side and had extirpated the appendix and the pain and the complaints and the effects continued until proper surgery was done on the pelvic organs.

"I think it is fortunate that gynecological surgeons are in the habit of making an incision in the median line, as it enables one to see not only what is wrong in the pelvis, but also to find out the pathological condition of the appendix. Somehow or other I cannot understand why the universal surgeon, when he makes up his mind that he has to deal with an appendix, is bound to make an incision as small as possible on the outside of the rectus, or it may be that he perhaps has some pet scheme or some special way of opening the abdomen, and absolutely deprives himself of the benefit of getting a look into the pelvis and also, if there is pus, deprives himself of the opportunity of draining through the natural channel of drainage, and that is (as water flows downhill) through the vagina. I have seen eminent surgeons go to work and drain uphill through a lateral incision in cases where there was a big pus abscess, simply because in operating on a male patient they think they must drain uphill and absolutely forget, on that account, that there is an outlet through the vagina whereby they can get rid of the pus and can get free drainage and better results than otherwise.

DR. F. C. HOLDEN asked to be enlightened as to what Dr. Child meant by inversion of the appendix.

DR. JOSEPH BRETTAUER asked as to what Dr. Child had in mind when he referred to "other involvements." The doctor stated that the reader of the paper spoke of "other involvements" in every classification to which he had referred and had given the number of cases in which "other involvements" were present, and that he wanted to know just what Dr. Child meant when he made this reference.

DR. J. O. POLAK.—"Apropos of Dr. Krug's question of drainage, it has been our misfortune to see a very large number of young girls operated for appendicitis and to have these operations followed by right adnexal conditions, particularly in cases where drainage has been used and where drainage has been put down into the pelvis and the patient placed in the Fowler position. I think in looking up the cases that we brought before you at the last meeting, or the meeting before that, there were a number of those cases that had been operated on for chronic appendicitis and some for acute appendicitis, all of which had the same picture in the right adnexa; that is, we found the tube and ovary in the cul-de-sac densely adherent. Some of these cases had been drained and I was particular to investigate as to the posture that they had whenever they came in with a right-sided scar and were complaining of right-sided pain after an appendix, and it was interesting to note that while the Fowler position undoubtedly diminishes the mortality in some of these cases and localizes the inflammation to the pelvis, still it is a great factor in the production of subsequent tuboövarian inflammation."

Dr. William Pfeiffer.—"This may be a little aside from the subject, but last week at Syracuse, Dr. E. P. Davis, of Philadelphia in discussing appendicitis in pregnancy, said the pregnant woman wears her appendix variously. A discussion arose following a paper on chronic appendicitis, in which the universal surgeon said he had difficulty in finding the appendix at operation in pregnant women, and that he usually finds it in one of three places—adherent by a strip to the uterus, retrocecal, and in the vicinity of the liver, and Dr. Davis advised the surgeons to make a median incision, in order to find the appendix the more easily. Then he took this more radical stand, that in performing Cesarean section he closes the uterus and then removes the appendix.

"In regard to the removal of the appendix in ectopic pregnancy, the removal of the appendix in this condition has been questioned and the only case of ectopic pregnancy which I can recall having lost was one in which I removed the appendix and the patient died of peritonitis, but whether it may have been due to that or not I do not know."

Dr. O. P. Humpstone.—"Dr. Child touched on the question of pregnancy and I, therefore, feel that the obstetrician should have something to say on this paper.

"The greatest sin I see against the appendix is the sin of making a diagnosis of acute appendicitis in pyelitis of pregnancy, and the error that we should not make would be to commit the same sin ourselves, in the first place, and, in the second place, we should educate the universal surgeon so that he won't do it so often."

Dr. I. C. Rubin.—"It may be of some slight interest to the Society, *apropos* of removing the appendix during the operation for ectopic pregnancy, to know that in a series of a considerable number of cases where the question of decidual reaction of the appendix was sought for as a complication, or as an associated process of the ectopic, no bad effects resulted. However, that feeling still remains. I am quite sure that there must be a series in one hospital, with which I was connected, of several dozen cases of ectopic pregnancy where the appendix was removed as a routine, not for removing or curing a pathological appendix, but rather with the idea of investigating, microscopically, the question of decidual reaction. No bad results were seen."

Dr. Charles G. Child, Jr.—"Dr. Brettauer asked as to what I meant by other involvements. I used that classification in order to bring out particularly the cases in which the appendix was adherent to other than the right adnexa, to the cecum, to the mesentery or to the omentum and such involvements which we meet in our operative work.

"Dr. Holden asked as to what was meant by inversion of the appendix. I meant Dr. Edebohls' operation of simply stripping the peritoneal covering from the appendix and then inverting it into the cecum as you would invert the finger of a glove. That is the only method that I know of making the appendix harmless with regard to future attacks of appendicitis where you can conscientiously say to the patient, 'This will not add to the seriousness of your operation or the danger of complication.' If it is removed, and the lumen cut across you can never be sure that infection will not occur."

The doctor then referred to the statement made by Dr. Holden, in which the latter said he did not remove the appendix when operating in cases of ectopic pregnancy. Dr. Child stated that Dr. Holden did not give the reason why he did not remove the appendix in this condition, and stated that his cases showed a very small percentage of that class.

"With respect to Dr. Krug's question in regard to the cases in which the universal surgeon had previously removed the appendix, I would say that those cases were not included in this report at all. They were purposely left out. They were encountered very many times, of course, where the appendix was only a secondary involvement and not primary.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

Meeting of May 1, 1919.

DR. WM. E. PARKE *in the Chair.*

DR. EDWARD A. SCHUMANN presented a specimen of

OSTEOMALACIA IN AN ANTELOPE.

The animal from the Philadelphia Zoological Garden had been pregnant and was weak in the knees and legs and unable to stand up. It miscarried and later regained its health. In six months it was again pregnant and again could not walk and after a few weeks died. Autopsy revealed cystic ovaries and the partly developed embryo in the uterus. The skull is typical of osteomalacia and shows many osteophytes. The pelvis was markedly distorted, the bone bending easily in the hand. Osteomalacia is a fairly common condition among wild animals in captivity, this suggesting the correctness of the view that the disease is essentially one of metabolism.

DR. GEORGE M. BOYD read a paper entitled

SOME REMARKS UPON INVERSION OF THE UTERUS.

(For original article see page 161.)

DISCUSSION.

DR. JOHN A. MCGLINN.—"I have had several cases of acute inversion of the uterus. One which I recall occurred without traction on the cord or pressure being made over the fundus. It is my impression that I reported the case before the Society ten or twelve years ago. As Dr. Boyd said a number of causes are given for acute inversion of the uterus but that the majority of cases are due to faulty traction on the cord or the improper use of the Credé method in the expulsion of the placenta. The accident is also attributed to a short cord and precipitate labor. It is believed that in these cases of spontaneous inversions there is a diseased area in the uterine wall, an area which does not contract after delivery while the rest of the uterus is contracted, and the uterus in an attempt to expel what to it is a foreign body turns inside out. In the case referred to I was able to replace the uterus by simple taxis. The placenta was attached and the bleeding was not severe, nor was it after the placenta was removed. There was considerable discussion in the literature of about ten years ago upon the question of whether the placenta should be detached before the reposition is made. It was argued that on account of hemorrhage the attempt should be made to replace the uterus with the placenta attached. It seemed to me that it was better to first detach it because there would be less material to dispose of and less danger, therefore, of inversion recurring. In one case of long standing inversion and marked ulceration of the uterine mucosa I decided to do a vaginal hysterectomy. We found marked adhesions in the cup of the uterus when we removed it. In the majority of cases I believe that attempt to replace the uterus should be made rather than to remove it. It is a question in my mind so far as function is concerned, whether the uterus is really a functioning organ with respect to pregnancy if inversion exists for some time. It seems to me that there would be enough inflammatory reaction and change in the mucosa to seal up the Fallopian tubes. An operation with the minimum amount of traumatism would seem to me to offer better results than attempts at reposition."

Dr. Edward A. Schumann.—"I would like to ask Dr. Boyd what becomes of the bladder in these cases? Is it ever caught in the cup of the uterus and there damaged by the Spinelli operation?"

Dr. Boyd (closing).—"Regarding the question of detachment of the adherent placenta before the reposition of the uterus, in a rather cursory review of the literature, I find that operators are about equally divided upon its removal before or after the uterus is reposited. It has seemed to me better to remove the placenta and then attempt the reposition because with the placenta attached, you have a much larger mass and any difficulty in correcting the inversion is increased by the bulk of that organ. Regarding hysterectomy, some of the text-books suggest hysterectomy in all cases when reposition cannot be accomplished by taxis. There are a number of cases on record where hysterectomy has been performed, the inversion mistaken for a neoplasm.

"Dr. Schumann spoke of the danger of injury to the bladder. Only very rarely is the bladder invaginated. One or two cases only are on record in which the bladder has been drawn down into the funnel of the uterus and injured. If the colpotomy is made close to the cervix, there is little danger of injury. In my second operation, while I am better posted with the literature now, I did not make a free attempt to go into the cul-de-sac, but made a partial incision of the cervix and placed a catheter in the bladder and found that the bladder was not in the way The anterior cul-de-sac was now opened and the longitudinal incision in the anterior uterine wall also made to sever the uterus completely and carried up to within 1 cm. of the fundus. I am sorry there has been no discussion of the first case. Here there was acute inversion in which taxis failed and just how to handle it was to me a problem. It might possibly have been managed by the vagina but the mass was large, completely filling the vaginal cavity. The case had been treated before coming into the hospital and rather than attempt to replace the uterus from below, it seemed to me better, though more radical, to open the abdomen and relieve the compression from within. The cervix by pressure relaxed and reposition of the uterus was easily accomplished."

DR. J. C. APPLEGATE read a paper on

THE INDICATIONS FOR CESAREAN SECTION.

(For original article see page 167.)

DISCUSSION.

DR. DANIEL LONGAKER.—This is an exceedingly important topic and while I do not feel entirely qualified to discuss it in all its phases, there are a few points that suggest themselves to my mind as matters for discussion. In the first place, it occurred to me that Dr. Applegate is extremely generous to many of these patients who desire the operation of sterilization. My own feeling is that we should go very slowly in this matter and I think it is a mistake to sterilize a woman just because, on this particular occasion she was the subject of Cesarean section. I think the woman at a time like this is not capable of exercising her best judgment, nor is her husband. I believe that a decision on their part given at a time like this is many times regretted in after years. Moreover, I do not think we ought to sanction indiscriminate sterilization. Dr. Applegate has done this operation ten times in eighty-nine women. I do not remember just at this moment how many Cesarean operations stand to my credit. I have twice sterilized under these conditions in probably fifty operations. The first was done some twelve or thirteen years ago and I think the parents of this one child have regretted that sterilization was done. In the second case although the woman had a pulmonary lesion she has expressed the regret that her boy is the only child she can ever bear. I do not know that there is any likelihood of this matter becoming one of medico-legal importance, but it is barely possible that it may. I think we ought to go slowly because it is capable of demonstration that under proper conditions the Cesarean operation can be done primarily, that it can be done again, a second time probably with less risk than at the first time. It is certain that under proper conditions, in a proper place, the

Cesarean operation can be done with a very, very small morbidity and with almost a *nil* mortality. I am speaking of cases that are properly selected. Another matter of importance is the ,occasional occurrence of the complication in the puerperal convalescence of acute dilatation of the stomach. I have seen this occur several times; once fatally in a patient operated on by a friend. There is always present in these cases a low-grade infection and that this explains the complication. In the acute toxemia in the primipara with retinal changes I believe with Dr. Applegate there can be no question of the urgent indication for emptying the uterus by Cesarean section. If slower methods be relied on the additional time required of from twenty-four to forty-eight hours may mean irremediable damage to the eyegrounds which might otherwise have been prevented. I have seen this occur, as demonstrated by expert examination.

Another exceedingly important class of cases is that comprising the post-mature babies in either primiparæ with normal pelves or with slightly contracted pelves, or in primiparæ or multiparæ with normal pelvis with greatly post-mature oversized babies. The alternative that we have under these circumstances would be the judicious resort to an induced labor, or the natural delay until the patient goes into successful, or what may be unsuccessful labor. Now I have no doubt at all that those cases of post-maturity are frequently cases in which the fetus is in the right dorsal position. They usually occur in multiparæ with more or less pendulous abdomen; or, there may be some other reason more remote why the patient does not go into labor at the ordinary period. Indiscriminate resort to induction of labor will give less favorable results than allowing the woman to go naturally into labor, taking great care of her and if necessary doing Cesarean section after a judicious use of the test of labor. Taking a large number of cases I think the resort to the induction of labor is very much more apt to lead to difficulty, danger of sepsis, than the performance of the Cesarean operation. The only bad results I have had in these cases in the last ten years have been, in two in which I induced labor. I have had one fatality where the woman became infected by the bougie and died on the eleventh day. In another case occurring a few years ago the woman ran a prolonged course of streptococcic hemolytic infection (organism recovered from blood culture) lasting seventy days with final recovery. I have seen nothing like this in a greater number of Cesarean operations in my own practice and that of my colleagues. The lesson would seem obvious: Cesarean operation rather than indiscriminate resort to induction of labor under doubtful indications.

Dr. George M. Boyd.—"The success of Cesarean section has carried with it an inordinate broadening of the indications and many feel that it is much too frequently performed. Dr. Applegate reports less than 100 cases with six deaths a mortality of 7 per cent. we must take seriously. When the operation is performed for the relative indication we should also remember that one Cesarean will probably make it necessary to repeat the operation in future pregnancies. I do not think that we are justified in performing this operation because it is the patient's desire. The fact that the patient mentioned by Dr. Applegate was undersize, I am sure influenced him and not the fact that she was a nurse and wanted the operation. In placenta previa, I believe section is seldom indicated. In 1917, I reviewed the subject, reporting fifty-nine cases with a maternal mortality of 11.8 per cent. Four of these cases upon admission to the Hospital were exsanguinated, too late for any treatment. In 1913 Doederlein published a maternal mortality of 5 per cent. by the older methods and a fetal mortality of 48 per cent., while Cesarean section gave a maternal mortality of 9 per cent. and a fetal mortality of 30 per cent. If these figures are correct, section is better for the infant but worse for the mother. In eclamptic cases, the retinal changes have been developing for some time prior to the appearance of the convulsions and it is questionable in my mind whether much time is saved by doing Cesarean section. The etiology of the disease is uncertain and in many cases we have no indication for section. I do feel however, that the operation is indicated in the exceptional case. I am unable to measure accurately the length of pregnancy and covet the skill of some who claim to possess that ability. For this reason it would seem to me better in the group of cases mentioned by Dr. Longaker, where postmaturity is suspected, to let the case go to term and give her the labor test."

DR. EDWARD A. SCHUMANN.—"In regard to Dr. Longaker's remarks concerning sterilization, I do not believe that any man has a right to say to a woman that she must have an abdominal operation of the seriousness of Cesarean section done more than once. Furthermore, the literature shows that the mortality and morbidity of repeated Cesarean section is materially increased over primary Cesarean section. Factors in this increased mortality and morbidity are rupture of the scar, postoperative infection and hemorrhage. Personally it is my opinion that if the matter be properly placed before the woman and her husband and they agree to it, sterilization is not only the justifiable but the only proper thing to do. Dr. Longaker speaks of the woman and her husband having regretted such decision. The impossibility of a subsequent pregnancy is not nearly so bad as the fear of Cesarean section in the event of subsequent pregnancy. With regard to placenta previa and the 5 per cent. mortality by podalic version—and I think it is nearer 35 per cent.—I believe that Cesarean section solves the problem with better results for the mother and the baby. It gives so little traumatism and such smooth recovery to mother and child that to me in the particular type of case mentioned it is an ideal procedure. Cragin pointed out that the eclamptic case bore traumatism and shock badly. Therefore her successful delivery depends upon a minimum of traumatism and of shock. If the woman is a multipara and spontaneous delivery takes place there is a minimum of traumatism and shock. If she has even a minor degree of pelvic contraction, undilated cervix, or if she is not in labor, then abdominal Cesarean section delivers the woman with the minimum of traumatism and shock. The condition of the patient the morning following Cesarean section is quite different from that of the woman who has undergone a long tedious labor. I believe with Dr. Boyd that we can easily go too far and do this operation in cases that would go into labor under appropriate treatment. When such treatment fails, however, Cesarean section is by all means the procedure of choice."

Dr. John A. McGlinn.—"It seems to me that the indications for Cesarean section occupy a rather limited field. There is one, so-called, indication responsible for a large series of Cesarean sections, and which I do not think really exists. I speak advisedly because I have seen time and again Cesarean sections done in slightly pendulous abdomens with normal pelvic measurements, with the conjugate of 7½ to 9 cm. without a test of labor. The case of deformity or of contraction of pelvis to such extent that the operation is demanded is the only absolute indication, in my opinion, for Cesarean section. Next to that in urgency of indication is placenta previa. The operation is such an easy procedure and such a nice one to show in clinic that it is apt to be done much too often. The patient, however, as Dr. Schumann pointed out, is subjected to the danger of rupture of the scar and to morbidity. No matter how clean the operation may be, a patient whose peritoneal cavity has been opened is never quite the same as before. In eclampsia I believe with Dr. Schumann the question is that of the easiest method of emptying the uterus and which will affect the patient the least. In some multiparæ with large birth canal and normal sized child rupture of the membranes will be followed by the birth of the child without shock to the patient. Another case may present a contracted pelvis with rigid soft parts and here I think Cesarean section gives less traumatism and is better for the patient than a normal labor. In cases of breech presentation in primiparæ Cesarean section gives a better mortality for the child. This recalls to my mind a case which demonstrates the necessity of carefully made statements in text-books. In this instance ether had been given in the delivery of a primipara with loss of the baby. The obstetrician was severely criticized and reference made to the fact that in a certain text-book the giving of ether in such a case was advised against. As a matter of fact, however, the author of the text-book openly says that he uses this anesthetic under similar circumstances."

Dr. Applegate (closing).—"I am quite in accord with Dr. Longaker, regarding the sterilization of patients. No woman should be sterilized without a just reason. Could he have seen the cases in which sterilization was done, I think he would quite agree with me that the operation was justifiable.

"The women who were hunch-backs, also the one with an infantile pelvis, having been in a cast for a long time when a child, were certainly not qualified to have more than two children by section. In fact, the general condition of all who were sterilized was such that they were not fit subjects to withstand the repetition of preggnancy and inevitable Cesarean section.

"The patient who claimed she was overdue was an emergency patient who came to us in labor with no previous opportunity to estimate the size of the head and the pelvis, otherwise she would not have been allowed to continue her pregnancy as long as she did, before labor would have been established.

"Dr. Boyd, evidently did not understand that there was one death out of fifty-three elective sections, and this one had incipient pulmonary phthisis plus a contracted pelvis.

"A mortality of five in forty-two emergency cases is not high, as many of the patients had been in labor and with some of whom attempts at delivery had been made, by different attendants. I agree with Dr. McGlinn, that a primipara, with breech presentation unless she has a roomy pelvis or a small child, stands a better chance of obtaining a living child with Cesarean section, than with birth of her baby by the natural route."

TRANSACTIONS OF THE BROOKLYN GYNECOLOGICAL SOCIETY.

Meeting of May 2, 1919.

The President, Eliot Bishop, M. D., *in the Chair.*

Dr. O. Paul Humpstone, M. D., reported a case of

FOUR MONTHS' PREGNANCY IN A RUDIMENTARY HORN OF THE UTERUS WITH RUPTURE.

Mrs. ———, No. 70204 was admitted to the Methodist Hospital Oct. 18, 1918. She gave the following history: Married, thirty years of age, white, native of the U. S., housewife.

Her chief complaint was terrific abdominal pain, vomiting and feeling of great distress. The family and past history was negative. Menstrual history, began at 14, regular, twenty-eight-day type, not painful. Married two years, one previous pregnancy resulting in a seven months' premature birth, ten months ago, the child lived six weeks. Now pregnant four month's, last menstruation June 20, 1918, since that time she spotted at each succeeding menstrual date.

Present Illness.—While standing at the dinner table at 12 o'clock to-day, she was taken with severe pain in the lower left quadrant of the abdomen—"She lay down and yelled, then became covered with cold sweat and then vomited." She soon suffered from air hunger and thirst; called a physician—who ordered her to the hospital. She was removed in a furniture van—no ambulance being available because of the influenza epidemic which was then at its height.

Her physical examination on admission showed a well-nourished woman, with an ashen white face, cyanotic lips and fingers, and very anxious expression. Calling for water and complaining of smothering, apparently not in pain. Head negative, lungs clear, apex in the fifth space, very rapid, sounds clear and of good quality. Pulse, 130, poor tension but well sustained. Abdomen, quite distended and tender throughout, no rigidity, although quite resistant to deep pressure, shifting dulness in flanks—no masses to be felt.

Vaginal Examination.—Tenderness in right and left fornix, especially on movement of cervix, which presented the softness of pregnancy but was closed. The fundus could be made out very indefinitely about the size of a three months' pregnancy. No masses could be felt in the adnexa but a definite resistance was present in the cul-de-sac and in both fornices.

Her blood pressure was 50 over 30, blood count showed 2,150,000 red cells, hemoglobin 30 per cent.

A provisional diagnosis of ruptured ectopic was made.

She was given 1/8 of a grain of morphine by hypo and prepared for operation. The bed was placed in Clark's position and in two hours the pulse had improved in quality and diminished in frequency from 150 to 120. She was catheterized and under ether and oxygen anesthesia as median incision found the abdomen distended with blood, and containing a dead fetus about 7 inches long which was attached by the cord to a placenta, which in turn was protruding from a rupture in a rudimentary horn on left side of the uterus. In the rupture and subsequent contraction this portion of the uterus had turned practically inside out.

The horn and the left tube and ovary were clamped off and removed. The left round ligament was severed from the horn and attached the uterus just above the wound. The uterus wound was closed with two layers of sutures—the blood removed from abdomen —and the abdomen closed by layer suture.

The patient had a sharp reaction, temperature reaching 105° and the pulse going to 190. She was kept morphinized and stimulated with digalen and strychnine.

She improved steadily and was discharged from the hospital on the twentieth day, her blood count then showing 3,576,000 red cells and hemoglobin 53 per cent.

The specimen showed a typical rudimentary horn about the size of an orange—with a solid muscular band attaching it to the uterus through which no communication with the uterine cavity could be found. The Fallopian tube on that side was patent and the round ligament was attached to the anterior and outer aspect of the rudimentary horn.

Dr. H. J. W. Morgenthaler read a paper entitled

ADMINISTRATION OF THE OBSTETRIC NURSERY.

(For original article see page 186.)

DISCUSSION.

Dr. Frederick C. Holden.—"I have always thought that nurseries should be in charge of the pediatrician, and at the Greenpoint Hospital I have always had our babies referred to the Pediatric Department.

"I feel that the importance of the nursery is minimized in many institutions. There are a great many facilities for the women, but the babies are very much neglected.

"The matter of the identification of babies, to my mind, is of importance from the standpoint of the mentality of the mothers and fathers. I think there are very few babies that actually get mixed. Any mother who has once seen her baby is able to identify it, but if we could have some absolutely 'fool-proof' method whereby we could assure prospective patients that it is impossible for their babies to get mixed with somebody else's, I think we would be able to overcome one of the difficulties which we experience at the present time in getting people to go to hospitals."

Dr. O. P. Humpstone.—"I think we are all indebted to Dr. Morgenthaler for calling our attention to our faults in the management of the nurseries in the hospitals of this city. It is certainly getting to be quite the vogue for obstetricians to quit, as far as the child is concerned, as soon as the baby is born. In fact, I do not know but that before long the pediatricians will take charge of the prenatal care of the baby.

"The points in Dr. Morgenthaler's paper in regard to the weaknesses in the nurseries, I think, are very well taken and very well recognized by all obstetricians.

"The most important point that he raised probably is the question of the identification of the babies, and Dr. Holden has sounded the keynote of the problem. It is a matter of psychology and not of practical interest at all. I recently took a mother, just to test this out, from her room into a private nursery. She had never seen her baby. She was pushed on a stretcher around among these babies and was asked which baby was hers and she picked out her own baby. Now, there is very little danger of a mother ever mistaking her own child, certainly if she has once seen it, and sometimes even when she has not seen it, particularly is this true if she has had a previous baby. There is no danger of mixing babies. Any mixing, such as taking babies into wrong mothers, is a matter of careless nursing technic. The mother knows it is not her own baby, and there is no permanent mistake in such a thing.

"In the matter of identifying babies, I think that at the Peck Hospital they have the best method, which consists of a little silver chain and a tag. All hospitals, however, are not so endowed with money and with ladies of wealth who are sufficiently interested in the maternities as to supply them with little silver chains and the little tags that go with them. There was one in the Brooklyn Hospital with a soft gold chain around its neck, which is even better still. I think the ideal way of marking them is with a small silver chain and a small piece of indelibly-written linen attached to that, so that it does not irritate the baby at all. The silver chains can be sterilized and one will not have more than thirty or forty babies in at a time. This method of Dr. Morgenthaler's it seems to me is a little bit complicated. You have to sort out the letter beads; or is it your intention to indelible mark them at the time of the delivery of the baby?"

Dr. H. J. W. Morgenthaler.—"The necklace is strung by the nurse before the baby is born, while the mother is in the delivery-room, and after the baby is born it is simply put around the neck of the baby and fastened, taking about a half minute to do it."

Dr. O. P. Humpstone.—"I see no objection to that, except that it is a little heavy for a small baby's neck. I should think it would be a little more disagreeable to a baby than a soft silver chain.

"In regard to the tying of the cord: I have tried Dr. Pomeroy's method of tying the cord close to the skin with chromicized catgut. I did a series of babies at the Methodist-Episcopal Hospital. I think we had three small herniæ in these babies, the same number about on an average as where the cord is tied long. To my mind, the problem of preventing umbilical hernia in these babies is the greatest problem in connection with the tying of the cord at the present time.

"The nursing of the babies, the washing of the babies and the daily care of the babies are matters that are not for the most part sufficiently taught to the nurses in the hospitals. We should arrange to have the head nurse hold definite clinics in which each nurse is made to go through the series of things which a nurse should do in the nursery, such as bathing the baby, attention to the bowel irrigation, dressing it, caring for the eyes, nose, mouth, etc. If a nurse before seven or eight of her colleagues, was made to do those things under instructions, then she would know how to do them, and it seems to me if we would have our head nurses take small groups of the nurses in each class as they are going to come into the nursery and put them through their paces like this, we would have a more accurate technic in taking care of babies in nurseries."

Dr. Donald S. MacNaughton.—"At the King's County Hospital there is a premature baby room, about 7 by 9 feet, which has been quite busy since the influenza epidemic. One thing we have there is a self-recording thermometer, worked by a clock mechanism, which records temperatures and we know if the room has gone down during the night. There is also a self-recording hygrometer, similarly worked by a clock mechanism, which keeps track of the humidity of the room.

The room is ventilated by a window-board, which is perforated. The humidity is kept up by allowing steam from the radiator to come out in the room, and it is controlled as an ordinary radiator is; that is, by a stop-cock mechanism, which allows a certain amount of steam to escape, and you can regulate that very well to control the humidity, and it also controls the temperature.

"The principal thing is to keep the temperature around 82 degrees, or even a little warmer than that, and the tracing on the chart shows it has been kept constantly at that point. We get variations of 5 or 10 degrees in the room temperature. "Our results have been good when we could control the wet nurse, but have not been very good when we could not. On one occasion we kept one colored woman in bed so she could not get away from us, and during that time our results were pretty good. All of our babies gained. When she went away and we couldn't get any wet nurse, our results were not so good.

Dr. R. H. Pomeroy.—"My only comment is on the equipment of tags and tails. Most laundries would rebel against that. Those tails are bound to come off in any laundry work. I wonder how they manage to conduct such an affair in the Woman's Hospital.

"I do not know what comment Dr. Morgenthaler made on the short-tie cord, as I got in after he had spoken of that.

"I think as far as my own practice in doing the short-tie cord is concerned, it does not contemplate the relief or the prevention of hernia whatever. It was merely to cut down the amount of waste material that is to slough off. I wouldn't suppose that, to my mind, it has any bearing on the question of whether there should or should not be a hernia as a result."

Dr. H. J. W. Morgenthaler.—"The necklace that they have at the Peck Hospital is a fine silver chain with a linen tag. The objections to this method are: the linen tag can easily be pulled off and then you have no mark of identification left; the little spring ring used has a sharp edge on it which is liable to scratch the baby, and it can be opened easily; silver blackens the skin. The idea of my necklace is to have the ends sealed so that it takes quite some time to undo. In other words, the idea is to get something that will stay on until the baby leaves the hospital so that the mother can see that she has her own baby.

With regard to the umbilical cord: I did not mention herniæ or their prevention, the short tie does not lessen the frequency. With the long cord there is more irritation at the navel and more liability of the purulent and bloody discharge so often seen, which may continue for weeks.

Dr. Humpstone spoke about a mother knowing her baby at any time. If a woman is under an anesthetic, it might be six, eight or ten hours before she is in condition to recognize her baby. In that time the baby could be changed a dozen times. I realize that after the mother has seen her baby she can usually recognize it again, but you want to get something that goes on immediately after the delivery and remains until the baby leaves the hospital.

Dr. Humpstone says the beads that I have used are a little bit large. I have had necklaces on babies at the hospital twice, and almost three times as large as those for over two weeks with absolutely no irritation at all. They have round edges and beads like that will cause much less damage than a very thin chain around a baby's neck. Another danger with the silver chain is that it may catch easily in the baby's clothes and constrict the neck. These beads, as I say, are round and therefore there is less friction with them. The necklace, which I have presented, is made of beads strung on a very strong enameled fish line, the ends of which are knotted twice and then sealed with a small lead shot which causes no blackening of the skin. This necklace, put on immediately after birth and kept on until the baby leaves the hospital, is a sure and "fool-proof" method of identification."

BOOK REVIEW.

GYNEPLASTIC TECHNOLOGY.—With a chapter on "Sacral Anesthesia." By Arnold Sturmdorf, M. D., Clinical Professor of Gynecology, New York Polyclinic Medical School; Visiting Gynecologist, New York Polyclinic Hospital; Consulting Gynecologist to the Manhattan State Hospital; Fellow of the American College of Surgeons; Fellow of the New York Academy of Medicine; Fellow of the American Medical Association, Etc., Etc. Illustrated with 152 Half-tone and Photo-engravings in the Text, some in colors, and 23 full-page plates with 35 figures, all in colors. F. A. Davis Company, Philadelphia, 1919.

Dr. Sturmdorf's book merits attention for it takes up from a new point of view this important branch of surgery. The author does not hesitate to do away with theories of pathology now practically abandoned, that are due either to misdirected research or erroneous clinical deductions. Plastic restoration of the injured birth canal constitutes, as Dr. Sturmdorf clearly points out, the very genesis of gynecological surgery. The standing which this branch of medicine assumed as a specialty may in fact be said to depend on the ingenious technical processes developed by Sims, Emmet, Hegar, and others. But we have learned that many of the principles thus standardized by these pioneers are no longer tenable. The author himself has written a great deal about plastic gynecological procedures and now presents his collected researches in a more elaborate book form. He details a variety of operative procedures for the purpose of illustrating the underlying principles of practice rather than the standardized individual method as one of universal applicability. In this attempt he may be said to be quite successful.

A review of Dr. Sturmdorf's book shows a division into chapters that are taken up with the discussion of the surgery of the cervix and perineum, together with sections devoted to the treatment of cystocele, fistula, malignant disease of the vulva, congenital malformations and their correction. Following the introductory chapters on general technic, the author considers the subject of sacral anesthesia in this branch of surgery and after a very thorough and complete description of the same, comes to the conclusion that notwithstanding the positive claims advanced by many operators, the region of the female genitalia and the pelvic floor do not offer an ideal field for major surgery under sacral anesthesia. The complexity of the sensory innervation added to the patient's discomfort from a necessarily prolonged lithotomy position, constitute intrinsic objections in the majority of the cases.

In the chapter on tracheloplasty, Dr. Sturmdorf claims that the great advances in this field by Sims and Emmet must now be subjected to revision, for to-day after a tenure of nearly half a century, the conviction is gaining ground that the reputed efficacy of these standardized operations is not substantiated by final analysis. Investigation by recent observers has shown that the classical cervix amputations are unsatisfactory as regards both immediate recovery and possible future pregnancies and that the postoperative effects of trachelorrhaphy are in comparison much more favorable. In other words, it is probable that the chronic endocervicitis is the recognized pathologic indicator and that it is not the tear in the cervix but the induced complications which bring the patient to the operating table. The morbidity from cervical lesions varies greatly but the concensus of more recent observations seems to point to the undoubted fact that infection is the dominating factor. Clinically the course of such infection may be immediate and acute, or what is more common, it pursues a more or less chronic course from the beginning. In the latter form it has usually been dominated chronic endocervicitis, a condition which is now assumed by Sturmdorf and others to constitute a concrete clinical entity. The current text-books, however, do not as a rule accord it special consideration and its description may be found under various captions. The author considers in detail the question of infection from the uterus and points out that there is a sharp line of demarcation between that from the body and that from the cervix. If, as has been assumed, the interior of the uterus is practically sterile, disturbances in menstruation and deciduation point to involvement of the corporeal endometrium which is probably secondary to involvement of the cervical portion of the uterus. Normal uterine contractions are essential to a healthy condition of the organ to maintain drainage as well as proper circulatory conditions. If these normal contractions are interfered with by infiltration of the myometrial muscle sheaths an infection of the uterine mucosa results. This must be looked upon as chronic ascending lymphangitis rather than an endometritis and it is this process which links the pathology and symptomatology of chronic endocervicitis with an involvement of the body of the uterus. If systemic infection results from primary foci in the mouth, gall-bladder, the appendix and other centers, why not, the author asks, from the cavity of the cervix? Why term a symptom toxic in the first instance and neurotic in the second? It seems hardly reasonable to believe, therefore, that the pinching of nerve terminations by cicatrices in the angle of a cervical tear constitutes the cause for a variety of nervous and other disturbances that accompany this lesion. Based on these premises, the author directs attention to the necessity of eliminating the entire diseased endocervical mucous membrane in treating this condition. He mentions curettage in such cases only for the purpose of condemnation and insists that the corporeal endometrium being a highly specialized tissue must be conserved and not scraped with impunity. In cases of cervical laceration with their attendant lesions, amputation of the cervix should not be considered in comparison with a procedure which entirely eliminates the main source of infection and yet leaves the muscular elements in the cervix, which are necessary for its proper function. For this purpose the author has devised his now quite well known plastic operation for the details of which reference must be made to the original work. Dr. Sturmdorf while not contending that this process brings about an ideal restitution to the normal in all cases, claims that the procedure obviates in most instances the shortcomings in the usual tracheloplastic results. He also thinks that it is most efficient in the treatment of sterility, as cervical lesions are probably the cause of this condition in many cases.

The mechanism of intrapelvic support is very entertainingly described and serves as an introduction to the principles of perineal restoration. The author's method of perineoplasty is very completely presented but must be studied in the original for a proper understanding of the same. Repeated attention is directed to the importance of the retrodisplaced uterus as a complication in pelvic floor injury. As the result of applying the author's procedure for calculating the "lumbar index," it would appear that over one-half of retroversions whether complicated or uncomplicated are congenital but that the congenital malpositions must be regarded as a compensatory necessity. It follows, therefore, that any procedure which converts such a retroversion into an anteversion converts a compensated into a decompensated visceral equilibrium within the pelvic cavity. Such patients if operated upon will therefore continue to suffer as before operation. The author believes that if the compilation of the "lumbar index" as he describes it, reveals an uncomplicated retroversion, this should be left alone and that in the other class of cases the coexisting intrapelvic complications should be eradicated, thus converting the complicated into an uncomplicated case. Theoretically this seems a reasonable attitude but practically the author's restrictions will probably not be noted by the majority of operators.

Dr. Sturmdorf believes that poise of the uterus is unimportant but that elevation is essential. Acquired retroversiom without descent resulting from levator impairment must be corrected by levator myorrhaphy and that acquired retroversion with descent should be corrected by levator myorrhaphy plus a vaginal shortening of the round ligaments.

In the chapter on cystocele the procedures of Frank and Goffe are very completely described and commended. Vaginal hysterotomy as a routine measure for the cure of complete procidentia is condemned by the author, who believes that this should not be done unless distinct pathologic conditions are present in the uterus. One may be inclined to differ on this point, particularly in a patient past the child-bearing age, in view of the excellent results which have followed this method, especially where it is combined with the flap-splitting operation advocated by Dougal Bissell.

The author includes a chapter on cancer of the vulva as well as one on elephantiasis. It may be supposed that this inclusion is merely for the purpose of referring to plastic methods in treatment.

Congenital malformations of the female reproductive organs are likewise considered in a general way, as it seems, for the same purpose.

The book as a whole is very bountifully and beautifully illustrated and also contains an extended bibliography of the literature quoted in its pages. As already stated above, the author must be commended for his industry and care in bringing together in a single volume the more modern plastic operations dealing with the female genitalia. The book is deserving of the attention of the profession.

RECORD OF CURRENT LITERATURE IN OBSTETRICS, GYNECOLOGY AND ALLIED SUBJECTS.

A. OBSTETRICS.

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*Advantages of Vaginal Route in Resection of Rectum for Cancer. W. E. Darnall, *Jour. A. M. A.*, 1919, lxxii, 1670.

To Correct Retrodeviation of the Uterus. J. Adeodato, *Brazil-Medico*, vol. xxxiii, No. 12, March, 22, 1919.

Corpus Luteum in Its Relation to Amenorrhea, Sterility, Abortion, and Pseudo Extrauterine Pregnancy. E. H. Ochsner, *Illinois Medical Journal*, vol. xxxv, No. 5, May, 1919.

C. MISCELLANEOUS.

Melena in New-born Infants. P. Balard, *Revue Mens. de Gynec. d'Obst. et de Pediatria*, vol. xiv, No. 3, March, 1919.

SELECTED ABSTRACTS.

A. OBSTETRICS

Twenty-four Cases of Breech Presentation.—Remy (*Revue mensuelle de gynecologie*, 1919, xiv, 10) considers this subject as based on two types of cases, viz.: those controlled from the start and those in which he was summoned as a consultant as a result of difficulties or complications. The first class comprised the greater number, seventeen. Of this number thirteen cases terminated in normal fashion. That is to say when the buttocks of the fetus presented, the woman was placed on the cross bed and the process of expulsion watched. Attention was paid, when necessary, to the cord, arms, head, etc. In this series all the children survived. The remaining four cases required active intervention because of failure of expulsive forces, but all survived, so that in the entire supervised series not an infant was lost. In the series of seven cases seen in consultation intervention seems to have been necessary throughout. In two cases the fetus was dead before the author's arrival. Of the remaining five, two infants died during extraction, the mothers being primiparæ. The remaining three evidently survived so that the total number of dead fetuses was four (or since two died before consultation, two). In other words the child mortality in this series of twenty-four cases was four of which two can be excluded from count. Text-books formerly taught that the child mortality in breech cases with out regard to analysis amounted to not less than 20 per cent. In this series the gross per cent. was below seventeen while the net figure is a little over 8 per cent. The author makes no mention in connection with the supervised section of prophylactic version but since his record in these cases was perfect the latter was clearly not indicated.

Missed Abortion.—Sergio Garcia Marrus in the *Revista Cubana de Obstetricia y Ginecologia*, 1919, i, p. 137, describes a case of this condition as follows: patient, a white woman, para-ii, aged thirty. Cessation of menses suggested a pregnancy which caused great joy, as another child was desired. Examined two months later for certain pains with loss of blood suggesting abortion. No cause of the latter could be elicited. General and genital condition aside from the above-named symptoms was normal. It was thought that the pregnancy could be spared by treatment. The latter consisted of rest in bed, opium, viburnum and "armed vigilance." In twenty-four hours all the symptoms were favorable. The threatened abortion was quieted to a *restitutio ad integrum*. Prophylaxis suited for the occasion, included prohibition of coitus, which was thought drastic. In a week the author was summoned and found clotted blood in the deep vagina. This contained an ovum which had come away en masse. The age of the product of conception seemed to be about ten weeks. The cause of the death of the embryo appeared to be a hematoma beneath the corium of the decidua. The amniotic fluid was scanty, syrup like and greenish and the embryo quite mummified, "exactly like an embryo preserved in alcohol." The ovum once expelled, the mother remained in the most perfect condition. Further study of the embryo showed that the cord was very short. Death of the embryo had apparently occurred three months before the expulsion. The abortion was from internal causes. Death had taken place in some manner through the cord, but we are not assured as to the exact nature of the accident, for such it was. The cord may have been too short *per se* or short because it had formed a loop about the embryo interfering with its nutrition and development. The author now quotes some standard authorities on the subject of missed abortion.

Renal Decapsulation in Eclampsia.—Jullien (*Revue mensuelle de gynecologie*, 1919, xiv, 131) after reporting a successful case, confesses that the indication for this kind of intervention is obscure. We know that the severest and most alarming cases can recover spontaneously. In about 80 per cent. of cases decapsulation has a good functional result while the general mortality in large series of cases, irrespective of intervention, is about 40 per cent. This discrepancy should not blind us to the fact that decapsulation is to be reserved for the very worst cases as a last resort. No confusion should exist here for, according to Tisserand, in sublimate kidneys decapsulation acts as a complete depurative yet the patients succumb in the end as if from quite other factors. Decapsulation is indicated in anuria—that is the bald statement. In these cases anuria is overcome and the course of the disease is in no wise prejudiced. Decapsulation then does no harm, can be done quickly under short ether anesthesia, without assistance and within twenty minutes. In the future it will be regarded as an obstetrical intervention for desperate cases of a singularly efficient character.

Motherhood.—R. W. Lobenstine (*N. Y. State Jour. Med.*, 1919, xix, 177) states that the nine months of intrauterine life, coupled with first month after birth, represent the high mark of danger in the life span of every individual, and that parturition still possesses for the mother many dangers, some of which are preventable. The only way improvement can and must be brought about is through efficient oversight of the expectant mother, both during pregnancy and labor. In New York City the first step in the simplification and coördination of the work for expectant mothers was the division of the Borough of Manhattan into ten zones. The basis adopted was the ratio of existing maternity facilities to the number of births in the different sections of the Borough. The second step was to establish a maternity center in each zone as the center of an educational campaign for prenatal care of mothers of the district. The fathers, too, need education and will not be neglected. It will keep records of every case coming under the care of clinics in the neighborhood and follow up each case so that no woman who registers shall be allowed to slip out from under medical care by reason of illness, carelessness or other causes. Nurses and social workers will be used as follow-up visitors and to keep in touch with each expectant mother in the district. It will promote and extend the work of every agency working in the zone and engaged in the problems of maternity and child welfare. It will secure the opening of new prenatal clinics conveniently located when not enough such clinics exist to serve the needs of the district. The district doctors and midwives will be urged to bring their cases to these clinics for consultation. It will be open day and night for emergency calls and will see that a doctor or midwife is supplied for all cases of labor and a nurse for abnormal labors. In the new prenatal clinics an effort is made to provide women physicians as far as possible in order, through these clinics, to reach the large class of foreigners who go to the midwife because of prejudice toward the male physician. The center will follow up each birth and see that nursing care is provided throughout the danger period. By coöperation with every social agency in the neighborhood and by house to house visiting, by nurses and social workers, practically every expectant mother in a given zone will, in time, be informed of the need for prenatal care. It will secure through other agencies relief and assistance for mothers belonging to families where poverty is clearly a menace to the health of mother and infant, and through coöperation with other agencies it will secure the necessary household assistance for the mother at the time of her confinement. All the clinics are to be standardized so far as records, nursing care and medical oversight, and an effort will be made to encourage all abnormal cases to go to the hospitals for supervision and delivery. Standards of prenatal requirements for both hospitals and maternity center clinics have been formulated by the Maternity Service Association of physicians. These requirements are: 1. Patients should be urged to register at a clinic early in pregnancy. 2. At the first patient should be given printed instructions for her general guidance during pregnancy. 3. Patients should be urged to return every four weeks (every two weeks for Maternity Center patients) up to the end of the sixth month, and every two weeks thereafter (for Maternity Center patients every ten days up to the eighth month and every week thereafter). If they do not do so, a postal should be sent, and if there is no answer within two days, they should be followed up in the home by nurse or social worker. In case the patient's condition is not entirely satisfactory at the time of any one visit, and in case she does not return on an appointed day, the visit to the home should be made at once. 4. The patient should bring a specimen of urine at each visit. 5. The medical examination should include: (*a*) Thorough physical examination. (*b*) Urine examination every four weeks up to six months: every two weeks thereafter (Maternity Center cases every week during the last month). (*c*) A blood-pressure estimation at each visit. (*d*) A Wassermann test in every suspicious case. (This can be carried out through the Board of Health.)

Method of Delivering the Placenta.—J. L. Baer (*Jour. A. M. A.*, 1919, lxxii, 1543) says that in a great majority of cases inability to accomplish expulsion spontaneously is due to the complete loss of tone of the abdominal wall just released from its prolonged condition of overstretching. After the usual period of waiting, averaging half an hour, and when the uterus is at the height of a contraction, as evidenced both by feeling it and by the pain the woman is experiencing, the writer grasps the abdominal wall crosswise above the fundus and pulls the rectus muscles together, thus taking up all the slack. He then encourages the woman to bear down, and in practically every case in which expression on the fundus would have succeeded, this procedure has succeeded.

Effect of High Carbohydrate Feeding on Nausea and Vomiting of Pregnancy.—J. W. Duncan and V. J. Harding (*Can. Med. Assoc. Jour.*, 1918, viii, 1057) have proceeded on the assumption that in the early toxemias of pregnancy the dominant factor is a metabolic one. They have utilized the physiological results of Imrie and of Mottram to connect the fatty degenerated liver found in postmortem examination of fatal cases of pernicious vomiting with the mild and moderate cases of vomiting. They have assumed a temporary lack of carbohydrate supply. They have found, in practically all cases of nausea and vomiting in pregnancy, the occurrence of the acetone bodies in the urine. They have endeavored to correct the deficiency of carbohydrate supply by administering glucose or lactose, but mainly the latter, and supplemented this by a high carbohydrate diet. In this way they have successfully treated over seventy cases of nausea and vomiting in pregnancy, including several severe cases of the pernicious type. They have met with seventy cases of vomiting in pregnancy which they have divided clinically in three classes, mild, moderate, and severe or pernicious. There should be a daily routine examination of urine for total quantity, acetone reaction and its intensity, specific gravity, albumin, sugar, bile. Treatment includes rest: in mild cases limitation of demands of housekeeping; in moderate cases, rest in bed; in severe cases, rest in bed with isolation. Defects in functions of lung, skin, kidney and bowel should be corrected. In mild and moderate cases proteids and fats should be eliminated for forty-eight hours and carbohydrates (fruits, cereals, fresh vegetables) forced. Severe cases require absolute rest from all food by mouth for about forty-eight hours. Carbohydrates should be begun as soon as the patient may be able to retain them and should be given frequently and in small amounts. In mild cases lactose solution, 5 per cent., 1 to 1½ quarts daily, is given by mouth. In moderate cases 1½ quarts daily of lactose solution, 5 to 10 per cent., are given by mouth if possible. When not retained, this solution may be given by rectum, using a urethral catheter, giving very slowly 10 ounces and repeating every four hours. In severe cases, 200 c.c. of sterile glucose solution, 5 per cent., should be injected under each breast for one treatment and then the method of rectal injection of lactose employed. In both moderate and severe classes, the administration by mouth should be resorted to as soon as possible. When the nausea and vomiting are fully controlled, the amount of lactose per day may be reduced to 15 grams, later this may be further reduced to a 15-gram dose tri-weekly. In all cases the reduction of the treatment or its discontinuance must be guided by an examination for acetone bodies and lactose in the urine. Return to a diet mixed with protein may be made as soon as the nausea and vomiting are under control, but a return to the fats must be made more slowly. In the mild and moderate cases the results from treatment along these lines were most gratifying. Complete and continued relief occurred in twenty-eight cases within forty-eight hours. Complete relief from vomiting, but with occasional returns of nausea, occurred in twelve cases. Many of the relapses were traced to indiscretions in diet. Two cases showed a continual nausea with hyperacidity throughout entire pregnancy; both of these cases continued to full term with no graver symptoms developing. In the moderate cases fourteen gave evidence of immediate and continued relief within one week of the installation of treatment. Three cases, however, were more stubborn and showed some tendency to revert to the pernicious type. With more complete isolation in hospital wards, success was very speedily obtained. In these mild and moderate groups, in forty-six cases pregnancy had not advanced past the first ninety days before treatment was commenced; the remaining thirteen cases were between the third and sixth month. In the pernicious group of eleven cases (seven primipara) the severe vomiting developed within the first one hundred and twenty days of pregnancy and only three showed any recurrence in the later periods. Among the multiparæ, three had had previous pregnancies terminated for toxic vomiting, and two of them on two occasions, whereas all proceeded under this treatment to full term.

Spina Bifida with Associated Disturbances in a Human Embryo 17 Mm. Long.—S. T. W. Cull (*Johns Hopk. Hosp. Bull.*, 1919, xxx, 181) describes an embryo which is of especial interest in view of the fact that, although having a menstrual age of only 79 days, it presents abnormalities of brain, spinal cord, viscera and skeleton, generally supposed to be characteristic only of much older monsters. That the cause of such conditions exists early in pregnancy is shown in the specimen described. As pointed out by Mall, the popular conception that mechanical influences have an important bearing upon the formation of monsters has been overthrown by recent chemical experiments. The specific action of dilute salt solutions upon amphibian eggs, for instance, will produce spina bifida in a large proportion of the embryos. The trouble would seem to lie, therefore, not in the ovum itself, nor in the external mechanical influences acting upon it at a later date, such as amniotic bands which compress the umbilical cord, but rather in the impairment of nutrition associated with faulty implantation, or in the toxic influences arising from a diseased uterus.

Renal Infections Associated with Pregnancy.—In summing up the dangers of renal infections in the pregnant woman, before and after labor, F. J. Parmeuter (*N. Y. Med. Jour.*, 1919, cix, 1080) makes the following suggestions: First: The removal of all focal infections before conception or early in pregnancy, especially if urinary symptoms are present; however, the silent bacteriuria must not be forgotten. For this reason a sample of sterile urine might well be examined bacteriologically, as well as in the routine way. Second: Careful attention to diet and elimination which reduces autointoxication to a minimum; because the patient is living for two and has the entire elimination for both. Third: All symptoms of urinary obstruction, *i.e.*, pain varying from an acute to a dull ache over the kidney or colicky in character, running down the ureter, should be carefully investigated and relieved promptly. Fourth: Labor should be conducted with the least possible trauma because of the dangers of pelvic inflammations ascending along the lymphatics. Fifth: Catheterization should be avoided if possible, because of the danger of infection, which may ascend through the ureteral lumen because of a patent orifice. If catheterization is necessary it is well to leave an ounce of saturated boric solution in the bladder for its antiseptic effect.

Pregnancy Complicated by Epidemic Influenza.—The recent outbreak of epidemic influenza offered P. Titus and J. M. Jamison (*Jour. A. M. A.*, 1919, lxxii, 1665) an opportunity for the study of fifty pregnant women attacked by the disease. Pneumonia and epidemic influenza complicating pregnancy have so many features in common that a study of the latter is of value, for its application not only to future epidemics, but also to the management of ordinary pneumonia as seen from time to time in pregnant women. The mortality from epidemic influenza in pregnant women is much greater than in nonpregnant women. Epidemic influenza caused abortion, miscarriage or premature labor in approximately 42 per cent. of the patients in this series. The outcome of the case depends largely on the effect of the disease on the pregnancy. The mortality among pregnant women, 48.2 per cent. without interruption of the pregnancy, was markedly increased (80.9 per cent.) by the occurrence of abortion, miscarriage or premature labor. The mechanism by which the disease disturbs the pregnancy seems to be a combination of deoxygenation of the blood, excessive accumulation of carbon dioxid in the blood, and a degree of toxemia sufficient to cause the death of the fetus. In the later months, the first two conditions may be sufficient to start labor, but in the earlier months it usually requires the additional condition of a dead fetus acting as a foreign body to initiate uterine contractions. The ill effect of abortion or labor on the course of the disease may be explained on the following grounds: (*a*) muscular exertion increasing the already excessive amount of carbon dioxid in the blood, and further straining the already weakened myocardium; (*b*) sudden release of intra-abdominal pressure by the extrusion of the fetus in an advanced pregnancy; (*c*) sudden reduction of blood pressure by hemorrhage incident to labor; (*d*) lessened resistance to the ordinary shock of labor and delivery. Pregnant women should be urged to avoid all possible exposure to cases of influenza or pneumonia or even common colds. In case of infection the patient should have absolute rest, fresh air (out of doors if possible), early stimulation, free elimination, avoidance of violent purging and quinin, sedatives as required, and in case labor or miscarriage comes on, early interference in order to relieve her as much as possible of the strain of the second stage. Forceps delivery is advised, as soon as the cervix is dilated. Anesthesia is contraindicated and not required, because the patients are usually so toxic as to be indifferent to the pain whether the delivery be instrumental or spontaneous. Prompt measures against hemorrhage, such as uterine pack, should be instituted. Hypodermoclysis of physiologic sodium chlorid solution is probably preferable to intravenous injection.

B. GYNECOLOGY.

Extra Tag on the Abdominal Sponge.—J. C. Masson (*Jour. A. M. A.*, 1919, lxxii, 1612) with a view to the special marking of all abdominal sponges, has them made with a metal ring placed around the base of the tape and firmly sewed to both sponge and tape with strong thread. If a sponge is reported missing, the abdomen may be röntgenographed before it is reopened; the presence of the sponge will be revealed by the metal band. In hospital practice this procedure should be especially applicable, since if after a morning's work a sponge is reported missing and any one of two or three patients may be the unfortunate retainer, röntgenograms may be taken of all of them, and thus a difficult situation is cleared up with a minimum amount of trouble.

Are We Justified in Removing a Comparatively Healthy Gall-bladder?—W. H. Magie (*Surg., Gyn. and Obst.*, 1919, xxviii, 402) is in favor of saving the gall-bladder in at least a majority of the cases. Physiologists as well as surgeons are of the opinion that the gall-bladder has a function, and when we admit it has a function, we are compelled to admit that function should be conserved, whether it be only storing bile or regulating the pressure in the bile-ducts and liver. Cholecystostomy is indicated in all cases of acute cholecystitis of only a few days' duration; also some cases of acute cholecystitis that have had previous attacks, provided the gall-bladder walls are not much thickened and free from adhesions that would indicate previous serious attacks, provided also, that the cystic duct is open and gall-bladder contains bile; and all cases of simple cholelithiasis, when gall-bladder shows little signs of ever having been infected and when exploration of the interior shows a comparatively healthy mucous membrane. Cholecystectomy should be resorted to (1) in all cases of hydrops with stricture of the cystic duct; (2) in many cases of acute gangrene or threatened gangrene of the gall-bladder; (3) in all cases complicated with imbedded stones in the cystic duct with ulceration produced by contact with the imbedded stone that when healed would probably cause stricture; (4) in all very thick-walled gall-bladders due to fibrous or calcareous degeneration; (5) in all cases of ulceration due to pressure of large stones; (6) in cancer of the gall-bladder where the disease is limited to the gall-bladder.

Perforated Gastric and Duodenal Ulcers.—H. M. Richter (*Surg., Gyn. and Obst.*, 1919, xxviii, 399) presents a study of seventeen personal cases of perforated gastric or duodenal ulcer and some fifty odd cases operated upon in Cook County Hospital in a period of five years. He says that the peritonitis resulting from a gastric or duodenal perforation is but slightly if at all infective during the first hours following the accident and, therefore, it must not be treated as a suppurative process. Drainage is almost always uncalled for in early perforations of gastric or duodenal ulcers. Drainage may be instituted (1) in late cases (after eighteen hours); (2), the rare instance of inadequate closure of the perforation due to physical inability adequately to invert the lesion; and (3), where gross masses of stomach contents are spilled into the peritoneum. The degree of patency of the pylorus after closure of the perforation alone does not determine the indication or otherwise for a gastroenterostomy. The operator's technic, quite irrespective of the method he uses, determines in a high degree, his mortality. Upon locating the perforation, if leakage is taking place, a finger should be placed upon it until a through-and-through running suture can be so placed as to whip it in. There is no occasion for any special type of suture. The object is immediately to close the leak. The perforation and the ulcer, of which it is a small part, should now be thoroughly infolded. When the perforation lies close to the pylorus and the area of induration is wide, it may be desirable to turn the first portion of the duodenum acutely upon the stomach and suture it there. The essential step is to bring broad peritoneal surfaces together. Fowler's position, nothing by mouth, and the use of large quantities of water per rectum constitute an important part of the after-treatment.

Acute Hematogenous Streptococcic Peritonitis.—Seven of M. A. Rabinowitz's (*Amer. Jour. Med. Sci.*, 1919, clvii, 797) eight cases occurred in females from ten months to twenty-one years of age. All occurred during the winter and spring months. This corresponds exactly to the seasonal incidences of the streptococcic throat epidemics. Although they did not occur during in epidemic of streptococcic sore-throat, yet the throats and peritoneal fluids yielded an identical coccus. We know that the Streptococcus hemolyticus sets up sporadic cases of tonsillitis and peritonitis. May not this organism, just as in the epidemics, infect the human body through milk and its products or by way of human carriers, be they handlers of infected dairy products, or those who have been in contact with cases of streptococcic angina?

The history, as a rule, was that the patient had suddenly, while in the best of health, been taken sick with high fever, reaching 104° F., or over, severe generalized abdominal pain, repeated vomiting and marked prostration. These phenomena persisted until admission.

When the peritonitis followed a distinct anginal attack, frequently a period of well-being, lasting three or four days, intervened before the sudden development of the peritonitic symptoms.

Death occurred in from three to eight days of the onset of the peritonitic stage, and was the result of cardiac and vasomotor collapse, induced by a virulent toxemia.

Blood cultures were taken during life in but four of the author's cases. In only one was a positive culture obtained, which showed a streptococcus in pure culture. In this case a blood culture had been taken thirty-six hours after the onset of the illness. A positive blood culture, especially very early in the course of the disease, speaks very forcibly for the hematogenous origin of the peritonitis, and cannot be ascribed to an agonal bacteremia. Early operation and drainage of the peritoneal cavity is indicated. This has resulted in the saving of two of eight cases, an unusually high percentage of recoveries. In these two cases the throat lesions and glands of the neck were markedly in evidence. The peritoneal exudates were only exceptionally of the thick creamy character noticed in primary pneumococcic cases. The peritoneal fluid yielded the Streptococcus hemolyticus in pure culture in seven cases and associated with the Bacillus coli in one case. This is highly instructive as compared with the fairly frequent finding of multiple organisms in the cases of peritonitis secondary to a lesion of an abdominal viscus. Monoinfection of the peritoneum would therefore strongly argue for a hematogenous source of infection. As the Bacillus coli is seldom present in the blood infections it is highly probable that it was present as a secondary invader in the peritoneal exudate.

Thorough search was made at operation for any gross visceral abdominal lesion. In no instance at operation or postmortem was anything found that could be accused of being the lesion responsible for the peritonitis; nor were there any evidences of cirrhosis, cardiac defect, chronic nephritis or other chronic disease present.

Surface Temperature in the Diagnosis of Surgical Abdominal Conditions.—In the seventies and eighties of the last century a number of observers made investigations of variable extent on the features and value of surface thermometry. M. E. Alexander (*N. Y. Med. Jour.*, 1919, cix, 1077) has recently investigated 50 normal cases and 250 cases of diseases of abdominal organs. He states that surface temperature can be determined by folding the skin over the bulb of an ordinary clinical thermometer and reading it after three minutes' registration. It should be compared with the opposite side. In surgical inflammations of the abdominal viscera (except kidneys), there is no elevation of temperature of the skin overlying them. In unilateral inflammation of the kidney there is frequently a localized elevation of surface temperature. In 74 per cent. of the cases of unilateral suppuration of the kidney the surface temperature on the affected side was 1° F., or more, higher than on the unaffected side. In advanced tuberculosis of the kidney the surface temperature may be lower than on the unaffected side. Determination of surface temperature may be considered an aid in the diagnosis of unilateral suppurative conditions of the kidney.

Advantages of Vaginal Route in Resection of Rectum for Cancer.—W. E. Darnall (*Jour. A. M. A.*, 1919, lxxii, 1670) advocates the vaginal route for resection of the carcinomatous rectum in women. It consumes less time than others; there are less traumatism, less hemorrhage and less shock. The dissection is easy; the exposure is more perfect and one works in an open field, thus being able completely to control hemorrhage. In the greater number of operations on the rectum for cancer the condition of the patient is much improved by a preliminary colostomy. The operation is practicable only when the tumor is movable and is situated in the lower half of the rectum. If it is as high as the rectosigmoidal junction, then the combined abdominal and vaginal operation should be employed. The sphincters should be thoroughly divulsed and the secretions of the rectum well washed away. A transverse incision is then made across the vagina at the junction of the mucous membrane of the posterior vaginal wall and the cervix. Perpendicular to this a median incision is carried down the whole length of the posterior vaginal wall over the perineum down to the anus. If the sphincters are to be retained, this incision should be deflected to each side at the anus. If not, it should continue completely around the margin of the anus. As the long median incision is deepened through the vagina and perineum down to the rectum, a large, thick flap of tissue is laid back on either side. When the rectum is reached, the fingers may be passed down along side of it and by blunt dissection the hand is passed completely behind it. It may then be easily pulled forward. If it is rigid and there is difficulty in bringing it down, the simple expedient of nicking the posterior layer of the mesentery of the sigmoid at its lowest point just at the peritoneal fold will overcome the difficulty and allow it to come down freely. The rectum is then clamped with a right-angled, rubber-tipped clamp about 2 inches above the margin of the growth and the rectum divided. If the sphincters are to be retained, the distal end of the rectum is similarly clamped and divided below the tumor. A 1-inch rubber tube is sewed into the upper end of the bowel and brought down and out through the anus, over which the anastomosis of the bowel is completed. After making the anastomosis it is well to draw the tubing down, slightly invaginating the upper into the lower bowel, and making a double row of sutures so as to assure perfect union and prevent leaks. In case the sphincters are removed with the rectum, the upper end of the bowel is brought out a full half inch or more beyond the anal skin and sewed fast to it. It is necessary to keep the anus and bowel well dilated with rectal bougies as an after-treatment to prevent the formation of strictures. After the rectal work has been completed, the muscles of the perineum are built up layer by layer, just as they would be in an extensive repair of the perineum, the lower lip of the cervix being sewed down to the transverse upper incision in the vagina.

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ORIGINAL COMMUNICATIONS.

GYNECOLOGY AS A SPECIALTY.

PRESIDENTIAL ADDRESS DELIVERED BEFORE AMERICAN GYNECOLOGICAL SOCIETY AT ATLANTIC CITY, JUNE 14, 1919.

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THE question that interests the gynecologist is not how much obstetrics, abdominal surgery, or general surgery encroach upon gynecology, but how much of gynecology does not come under the fields of obstetrics, abdominal surgery, or general surgery; how much gynecology has a right to an independent existence as a specialty; and, what is of more importance, if these questions can be answered in the affirmative, how the devotees of gynecology can convince the profession at large, and the students of medicine, of the tenability of its position.

Gynecology is an American institution, developed by the transcendent genius of MacDowell, Sims, Emmet, Thomas, Skene, Goodell, and Byford. They and their students dignified the study and practice of surgical and medical diseases of women into one of the most attractive and popular specialties of their generation.

Obstetrics in those days was allowed to remain in the hands of the general practitioner or midwife. Anyone who possessed the necessary patience, and, therefore, interfered little with nature, could become the most successful obstetrician.

General surgery at that time was limited to amputations, emergency injuries, and a general fear of the serous cavities. The in-

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ternist was the bed-side visitor and the prescriber for the acute ills of all persons. In those days of the birth of gynecology the gynecologist was the most envied and conspicuous of all specialists. He treated medically all women who labored under any illness peculiar to their sex that did not come under the head of an acute ailment; he interpreted and treated displacements of the uterus; he repaired at his leisure, lacerations of the perineum, cervix, and vesicovaginal fistulas that followed in the wake of the general practitioner-obstetrician; he presided as the high priest of specialists over the moribund women whose complications of labor were the subject of his call by the waiting practitioners; he occasionally accepted obstetrical cases and gave them the benefit of his impatience and his skill by hastening normal labor through the early application of his obstetric forceps.

Then antiseptic surgery under the genius of Lawson Tait and Joseph Price opened a new and conspicuous era for the gynecologist by developing the surgery of the infected appendages. The veritable orgy of pelvic surgery that followed this discovery established the renaissance of operative gynecology. This the gynecologists properly appropriated by right of discovery, added to it the already developed medical gynecology and a generation of the most spectacular specialization the world has ever known was enjoyed by its devotees. The initiative and pioneer work that was exhibited by the gynecologists at this time opened the way to the abdominal cavity, and the profession of general surgeons was not slow in acknowledging the debt, and was less slow in taking advantage of the discovery by extending and developing the surgery of the peritoneal cavity.

At this time there were initiated in the history of medicine two great movements that threatened the preëminence of gynecology and succeeded in disturbing its entrenched position, viz.: the science of obstetrics, and the science of abdominal and intestinal surgery. This occurred in the middle eighties and the early nineties.

The accuracy of gynecological diagnoses, the perfection of the particular methods and technic, and "our" operative triumph achieved in "our first one hundred or one thousand consecutive cases," began to be disturbed by complacent discussions on what part of this work should be done by the obstetrician trained abroad, or the abdominal surgeon who had received his training in the larger field of general surgery. The great entrenched specialty of gynecology found itself between the upper and the nether stones, the patiently waiting obstetrician insidiously invading from below, and the aggressive general surgeon, with his ardor, crushing everything before him from above.

Thus the devotees of this important specialty, instead of girding up their loins for renewed efforts in maintaining their enviable status, allowed themselves to be inveigled into a discussion that has neither been fruitful nor particularly interesting, except that it has demonstrated that there is an unsettled and unsatisfactory condition existing in gynecology.

The discussion has been waged from four different standpoints, each one of which has influenced the non-partisan bystander.

First, by the obstetricians, led by an obstetrician occupying a full-time professorship, with great honor and credit, in one of our foremost universities, an ex-president of this Society who dignified it, making obstetrics the subject of his presidential address. His conclusions placed the responsibility for the unsatisfactory condition of obstetrics in this country as follows:

"1. The tendency to regard the practice of medicine as an engrossing financial pursuit.

"2. Defective ideals and tendencies in medical education.

"3. The divorce in this country of gynecology and obstetrics."

And he adds:

"I hope I may live to see the day when the term 'Obstetrical' will have disappeared, and when all teachers at least will unite in fostering a broader gynecology, instead of being divided as at present into knife-loving gynecologists and equally narrow-minded obstetricians who are frequently little more than trained man-midwives."

Second, the discussion on the side of gynecology which was well voiced by a distinguished gynecologist connected with the same institution in which the obstetrician referred to above is serving as professor of obstetrics, his vehicle of communication being nothing less than an address as Chairman of the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association. His conclusions were:

"1. Obstetrics must be more attractive so that those entering this branch will not be tempted to leave it for less laborious fields.

"2. Any surgeon opening the abdomen should be capable of doing everything necessary in that abdomen. In other words, gynecology and abdominal surgery logically belong together.

"3. This realignment of abdominal surgery is absolutely necessary if we are to accomplish the maximum amount of good for the patient."

Third, the war that was waged between the Section on Surgery and the old Section on Diseases of Women and Obstetrics of the American Medical Association, which eventuated in a compromise, both being changed by the addition of Abdominal Surgery to each.

Fourth, the constant discussion in the faculties of medical schools of the country that has confused the status of the gynecologist as judged from the titles given to the men who are supposed to fill such positions. For example—among the "A" colleges, of fifty-four recorded, twenty-nine appear as Professors of Gynecology; fifteen as Professors of Obstetrics and Gynecology; five as Professors of Abdominal Surgery and Gynecology; and five as Professors of Obstetrics with gynecology occupying a minor position. Among the "B" colleges, of eleven recorded, seven appear as Professors of Gynecology; one exclusively as Professor of Obstetrics; and three as Professors of Obstetrics and Gynecology.

Thus it is obvious that there is confusion as a result of much discussion in the ranks of gynecologists, and the present status is unstable and far from satisfactory.

What justifies a specialty, and what maintains it if it is justifiable? A specialty is justifiable when a portion of the human body, physical or functional, is sufficiently distinct and important to warrant a group of practitioners devoting their whole time to the consideration of its diseases, if by devoting their exclusive time to such special subject they make it apparent beyond a doubt that such exclusive attention is justified by the improved results.

Examples of successful specialization are found in ophthalmology, laryngology, dentistry, pediatrics, genitourinary diseases, and obstetrics. These specialties conform to our formula, viz.: Physical or functional distinctiveness, justifying the exclusive consideration by a special group of practitioners as illustrated by their improved results.

Is there any specialty that conforms to our formula more definitely than the one dealing with the surgical and medical diseases peculiar to woman? Is not woman in her physical and mental attributes fully as distinct from children and men as children are distinct from the adult? Are not the organs peculiar to woman as important, and do they not warrant, when diseased, the study and treatment of specially trained practitioners fully as much as do the organs of sight, of smell, of hearing, or as do the children, or the woman in child-bed? The lack of proper recognition in this present day of diseases peculiar to woman, a lack that did not exist among the true gynecologists of the days of Sims, Emmet, Goodell, Thomas, and Byford, is one of the reasons for the decadence of gynecology.

Another reason is that the refined gynecological surgeon of twenty-five years ago is now diluting his energy by pursuing the strange gods of the upper abdomen, or exhausting himself by amateurish work in obstetrics, and while weakening his keenness in his own specialty, he is entering into an indefensible competition with those who have proved their special skill in their own work, and who naturally resent the intrusion.

Then, lastly, the gynecologist has undoubtedly lost ground because he has, while watching his neighbors, neglected to make good in the last requisites of our formula for a specialty, viz.: While devoting his whole time to the consideration of its diseases, he has not made apparent beyond a peradventure that such exclusive attention is justified by the improved results obtained.

In my opinion, if the gynecologist is to reëstablish the prestige of his specialty, he must recognize that there is enough in the diseases peculiar to woman to claim the exclusive medical and surgical skill of the most highly educated and gifted students of our profession; he must pursue a systematic research that will record the intricacies of difference of the mental, psychological and physical peculiarities of woman; he must establish scientific data that will form these factors and he must justify a system of therapeutic mechanics and surgery that will dignify and reward any physician who pursues the practice of that program.

When in the light of modern methods the gynecologist has by his research revealed the wealth of distinction that marks woman as a therapeutic and surgical entity, the teacher of gynecology in coöperation with the psychiatrist of our medical schools should aid in selecting and directing men because of special fitness to the pursuit of this or any other important specialty.

I may be wrong, but I have always maintained that a practitioner of medicine who is temperamentally fitted for the practice of obstetrics is entirely unfit to practice selected surgery or gynecology. I also believe that the average general surgeon chafes under the restraint of the time-consuming requirements of a true gynecological practice with its medical exactions.

To be more concrete, the gynecologist of this day must show his faith in his work by limiting his practice to his specialty. He must study woman, in regard to her peculiar reaction to glands of internal secretion, and to her reaction to her peculiar nervous system. Woman must be studied in regard to her general physical contour, and her muscular peculiarities; she must be studied in regard to the effect of the organs peculiar to woman in relation to the function of organs common to all individuals; she must be studied in regard to the relation of her peculiar organs which, without regard to their function, make her so different from man. But preëminently she must be studied in relation to the special function of these organs which, through an automatic apparatus, in a few months marvelously change the whole being, and then as marvelously retransforms it. The practitioner who cannot interest himself in these facts and take cognizance of their significance in studying the diseases of woman, cannot become a successful gynecologist.

When such a man is found, those interested in gynecology must see to it that he is educated. To educate him, the gynecologist must be in a position in his clinics and in his practice to show him the worth-whileness and the attractiveness of it all.

Revive, in the hospitals and in the teaching institutions what has been done so successfully in some of them (a conspicuous example of which is the Woman's Hospital of the City of New York), a system of teaching that convinces and interests. Get back to the days of Sims and Emmet when the specialty got the only boosting that anything worth while can thrive on, viz.: Making good by exclusive and superior work.

It is so simple—organization of team work in the open; careful study of cases; proof of diagnoses through scientific methods by accurate laboratory workers; staff discussion of all cases; system of records that reveals the facts to all and obviates the mysterious; follow-up systems that demonstrate the physician's responsibility in results. Then, of greatest importance of all, an invitation to medical students to attend the weekly meetings of the internes and the medical staff, presided over by the Chief of Staff, at which time the work of the week is reviewed.

Is it not inevitable that a program like this, carried out before students of medicine and hospital internes by a staff of earnest gynecologists, will show the value of special study of the diseases of woman when pursued in an institution that has provided every diagnostic and therapeutic means known to scientific medicine.

In discussing this subject, which is so full of partisan bias, which involves so many precious entrenched interests, which involves the reconstruction of hospitals and their attending staffs, which involves changes of medical faculties in their attitude to their specialties, and which involves the changing of names of societies and sections of societies, one is confused by the claims and counter-claims of contestants, and must remain content to endeavor to point out the fundamental difficulties and allow the facts to show the way of dealing with the details. I must be content to summarize my conclusions:

1. Gynecology, as an exclusive specialty, is justified under the formula: "A specialty is justifiable when a portion of the human body, physical or functional, is sufficiently distinct and important to warrant a group of practitioners in devoting their whole time to the consideration of its diseases, if by devoting their exclusive time to such special diseases it is made apparent beyond a doubt that such attention is justified by improved results."

2. Gynecology requires for its successful pursuit practitioners who recognize in its possibilities a specialty sufficiently broad and sufficiently congenial to their tastes to induce them to practice it exclusively. If gynecology requires for its successful pursuit the addition to it of the routine practice of obstetrics or the surgery of the upper abdomen of women, it cannot be ranked as a successful specialty.

3. The status of gynecology must be reëstablished by convincing the faculties of medical schools and the medical staffs of our principal hospitals that departments of gynecology are necessary.

4. Gynecologists as medical school teachers and as heads of hospital staff departments must emphasize the importance of their specialty by an exhibition of and teaching of their diagnostic methods, and a demonstration to their students and confrères of the importance of their medical and surgical results.

5. Discussions as to the relative value and relation of specialties should be abandoned and in their place should be established the old *esprit de corps* of gynecology, and its devotees should inaugurate a practical research program that will more definitely place the specialty of the surgical and medical diseases of women on a firm foundation.

30 North Michigan Avenue.

A CONSIDERATION OF UTERINE MYOMATA, WITH SOME OF THE COMPLICATIONS SEEN IN PRACTICE.*

BY

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A LARGE collection of myomata will present a great variety of conditions, adding to the difficulty in diagnosis, endangering the prognosis and requiring additional ingenuity in their surgical management.

Myomata occur with greater frequency in the period between thirty-five to forty-five years, but I have seen such growths attain considerable size and produce symptoms sufficiently grave to demand surgical consideration prior to the age of twenty-five years.

Condition of life has but little, if any, influence on the occurrence of the growths. Married or single, rich or poor, are equally their victims.

The character of the symptoms, the influence on the health of the patient, and the urgency for relief will depend largely upon the situation of the growth.

Extraperitoneal growths, unless under special conditions, are the slowest in producing symptoms, while the submucous and interstitial, which press on the mucosa, very early bring about marked symptoms and demand prompt consideration. A very small growth will often produce most serious hemorrhage in the form of prolonged or aggravated menstruation or may provoke irregular and more or less continuous bleeding.

A submucous growth of considerable size as it dilates the cervix, may be so constricted as to lead to caries of its mucous covering, adding to the hemorrhage an exceedingly offensive discharge. A physician who bases his diagnosis of malignant disease on the old tripod of pain, hemorrhage and offensive discharge will feel justified in deciding that the condition confronting him is malignant.

Some years ago I saw a woman, a widow, forty years old, who had been told by her physician that she had carcinoma of the uterus.

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* Read at a meeting of the American Gynecological Association, Atlantic City, June 14–17, 1919.

The patient's appearance indicated that she had lost blood, and the odor of the room that she had an extremely offensive discharge. Prior to the examination I feared that the diagnosis was correct. Investigation, however, disclosed a large, smooth, hard mass filling the vagina, which presented no indication of infiltration and no part of which was friable. It was too large to permit of palpation of it relation to the cervix, but its contour was such as to convince me that it was an extruded and pedunculated submucous fibroid.

I advised her that she could be cured by a slight operation, but she was so obsessed by what she had been told that it was hard to convince her that the condition was not serious. The operation was done later, and the growth was so large that it had to be reduced to permit it to pass the vaginal outlet and allow the pedicle to be severed. Needless to say, she did recover and visited my office six weeks later to ascertain whether it would be safe for her to marry. The differentiation in such cases from cancer is the recognition of a pedicle and the absence of any infiltration of the cervix.

Pedunculated subserous fibroids on the right side in pregnancy are not infrequently mistaken for appendicitis. As the uterus increases in size, the fibroid is pressed between the developing uterus and the bony pelvis or the abdominal wall like a cork into a bottle, and its blood supply obstructed. I have known the abdomen to have been opened in two pregnant women for supposed appendicitis when the condition described was found. In another case the same diagnosis would have been made had I not been familiar with the possibility of this state. I made the attempt to overcome the condition by pushing up the enlarged uterus, but she subsequently aborted. Even this was not sufficient to afford relief for the growth had already become necrotic and necessitated the removal of the uterus to save the patient. The possibility of such a condition should be considered in every suspected case of appendicitis complicating pregnancy.

Where the uterus is occupied by a number of growths which are especially of the subserous variety, so that its surface is irregular, the tumor, in order to adapt itself to the contour of the pelvis, becomes twisted on its vertical axis when the veins, being thinner than the arteries, obstructs the return circulation, and the uterus with its contained tumors enlarges from edema and may produce severe pain.

Increase in the torsion leads to necrosis, necessitating prompt operation to save the patient. Should the patient be pregnant, such conditions may necessitate enucleation to prevent abortion or save the patient from serious danger to life.

Invasion of the wall of the pregnant uterus for the removal of growths may seem a serious risk, but I have done enucleation of myomata at various stages of pregnancy in six patients without abortion having occurred and all went to full term.

Necrosis of a growth, whatever its situation, is a grave complication. When it affects a subserous growth, the latter is surrounded with inflammatory exudate, and if the loss of vitality is not too great nature revives the growth by a new blood supply through the adhesions thus formed. In large growths the resulting peritonitis may cause the woman's death. I unhappily look back to such instances in which my confreres and I lacked the courage to open the abdomen and afford the patient the only opportunity of escape. When the growth is submucous, Nature may be able to save the situation by the extrusion of the foreign body as a gangrenous mass, but large growths in a state of necrosis are most successfully treated by prompt resort to surgery. A growth involving a good portion of the uterine wall, finds that organ in poor condition to facilitate its rapid extrusion, consequently the mass must undergo disintegration and sloughing when it becomes a question whether the patient can stand the continuous poisoning from the absorption of the toxins thus formed. A partial or complete hysterectomy in such a condition is preferable to any attempt to save a uterus which, at best, must be crippled in function and be subject to reproduction of the growths.

In forming a diagnosis of neoplasms the investigator must not be content with the recognition of a myoma, as he must realize that other structures than the uterine may be the source of origin of such abnormal growths. They may originate in the ovaries, the Fallopian tubes, rarely in the broad ligaments, and not infrequently in the muscles of the abdomen.

Ordinarily, the latter growths are readily recognized by being superficial and as they increase in size they become dependent, but occasionally the growth may originate from the under surface of the muscle wall and as it increases push before it the parietal peritoneum as a covering until the growth fills up the abdominal cavity as would a myoma of the uterus. Such a case came under my observation some years ago which I have previously reported. The entire abdomen was occupied by what appeared to be a uterine myoma, but when the operation was essayed, the knife penetrated the tumor instead of the peritoneum and I awoke to the fact that I was dealing with a sessile tumor of the abdominal wall. The greater part of the tumor was covered with parietal peritoneum which it had pushed before it as it increased in size. The tumor weighed 19 pounds and after its removal left as a problem the closure of the abdominal cavity.

As myomata occur in the period of greatest sexual activity, the desire to conserve the procreative powers naturally inclines the operator, where possible, to employ measures for the enucleation of the growths rather than the sacrifice of the uterus. Where the uterus contains but one large or a number of small, closely situated growths so that the uterine wall is not greatly injured in their removal, such a procedure may be practised in the earlier years of life, but it should not be forgotten that in all such cases, there will be a recurrence of growths even though careful palpation at operation fails to disclose any indication of their presence. In a report some years ago of thirty-eight cases in which enucleation had been done, I was obliged to report a recurrence in every one.

Where the uterus is extensively injured in the removal of the growths the prognosis for enucleation is not so favorable as in hysterectomy, for the loose connective tissue of the organ is less resistant to infection and the convalescence is consequently more likely to be disturbed. Some twenty years ago, I operated on a Japanese lady at St. Joseph's Hospital, in whom seven fibroids were enucleated from the fundus of the uterus and after suture, as organ was heavy, it was sutured to the anterior abdominal wall in closing. In the convalescence the suture material of the uterus sloughed and escaped through the abdominal wound. After a rather prolonged convalescence, the patient recovered. She subsequently married and perished in her second labor from rupture of the uterus.

A single fibroid or a number in close apposition may be enucleated and the uterus be preserved, but where the growths occur in different parts of the organ, hysterectomy should be preferred as it does not seem either wise, or safe, to attempt patching together of a uterus whose inability to accommodate the developing ovum until the completion of the pregnancy or to successfully expel it at its termination must be evident. The certainty of the recurrence of the growths may not be considered a serious factor, for a patient who may enjoy the privilege of bearing one or more children may feel the endurance of a second operation more than compensated by the joy of motherhood.

A pedunculated fibroid which has dilated the cervix should, of course, be removed through the vagina, after its pedicle has been severed with a cutting instrument or by torsion. Where the tumor is situated within the uterine cavity and the cervix undilated, it can be removed by hysterotomy with less injury to the uterus and greater safety to the patient.

The retention of the uterus should be considered advisable only when the tumor or tumors do not destroy so much of the uterine wall as to unduly endanger the future of the patient should pregnancy occur.

When hysterectomy seems demanded, shall it be partial or complete? The partial operation is more readily accomplished, may be attended with less subsequent discomfort and less gravity than the total removal. The latter should be elected when the cervix has been much injured in previous pregnancies, or where there is a suspicion of a malignant condition complicating the myomatous uterus. The simultaneous occurrence of uterine myomata and carcinoma of the cervix or body is sufficiently frequent to justify the complete operation when there is any suspicion of malignancy.

This study is based on the consideration of 251 consecutive cases subjected to operation, in which 102 were partial, 144 complete hysterectomies, and the remaining five were removed through the vagina.

The mortality in the partial hysterectomies was five cases, or a percentage of 4.9; in the complete removal, eight deaths occurred, or a percentage of 5.5.

The existence of the fibroid, through the continued irritation or disturbance of the circulation, increases the danger of complicating infections. Tubal collections are not infrequent, large hematomatous cysts of the ovary are often found, and in many cases extensive adhesions and inflammatory changes greatly complicate the operative procedure. Intestinal, omental and vesical adhesions may so mat the structures together as to obliterate all landmarks and make hysterectomy in such cases one of the most difficult operations in surgery. The operator must be ready, instantly, to change his preconceived order of procedure for one adapted to the unexpected situation for the purpose of preserving and maintaining the important functions of the related viscera. In one case, where the small intestine with its mesentery was spread over a large fibroid, I rimmed out the growth, leaving the coils of intestine adherent to its surface. The adherent intestine maintained the nutrition of the portion thus left and the patient recovered.

has undergone liquefaction, so that in this section, the entire structure appears as an irregularly shaped thin walled cyst.

In section 9, the decidual relations are about as before, except that the hemorrhage has definitely taken place into the decidual tissues; while the compact layer of the decidua basalis has been almost entirely replaced by the spongy layer.

The egg itself is considerably smaller, and the celomic cavity has become reduced to a mere slit. The chorionic villi are more abundant, and particularly at the right pole of the ovum their tips are in organic contact with the underlying decidua, so that one is now justified in speaking of an implantation. The hydatidiform villus is larger than in the last section, and now exceeds the entire celomic cavity in size.

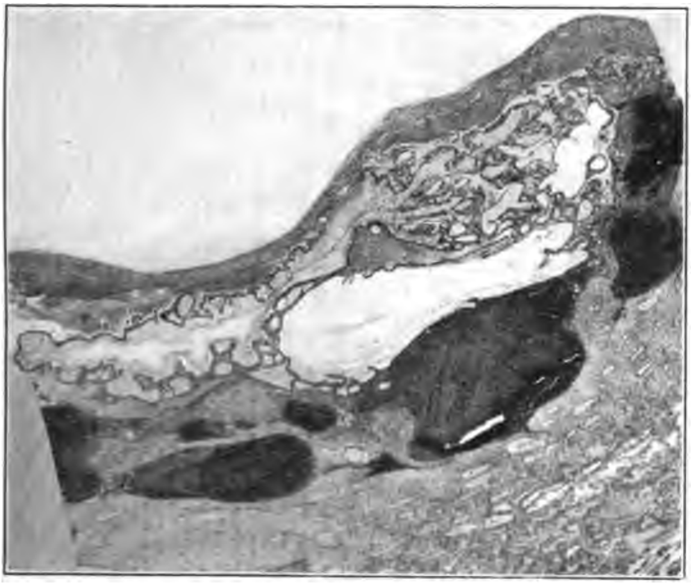

FIG. 9.—Same as Fig. 8, except that celomic cavity is still smaller, and right side of decidua is made up of the spongy layer.

In Fig. 10 the decidua capsularis is thicker than ever before. The egg, which is actually larger than in the preceding sections, consists almost entirely of aborescent villi, which extend from its entire periphery, while the walls of the chorionic membrane have collapsed, so that the cœlomic cavity has become obliterated.

Villi from all parts of the ovum are now in organic contact with the decidua capsularis and basalis, which are invaded by fetal elements.

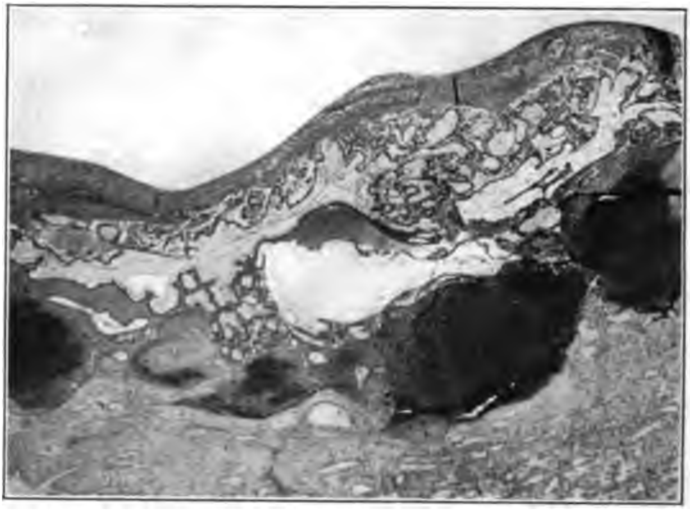

FIG. 10.—Same as Fig. 9, except that celomic cavity is still smaller, and villi more abundant.

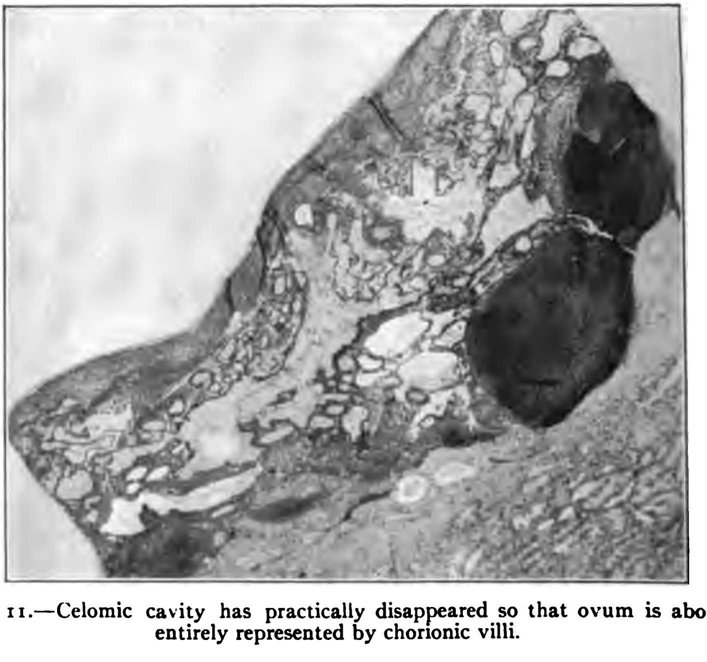

FIG. 11.—Celomic cavity has practically disappeared so that ovum is about entirely represented by chorionic villi.

Maternal blood is visible in the intervillous spaces, but no fetal vessels are present in the villi, whose stroma is poor in cells and in places myxomatous in structure.

In Fig. 11 the cœlomic cavity has entirely disappeared, and the entire egg is made up of branching villi. Many of these are unusually large and distinctly hydatidiform in appearance; although the very large cystic villus seen in the previous sections has disappeared.

The decidua basalis is now composed entirely of spongy layer, so that large gland spaces are everywhere visible. At the junction between the fetal and maternal tissues there is considerable invasion by fetal cells, although to a lesser extent than is usually observed in normal placentation, and very much less than is ordinarily noted in hydatidiform mole.

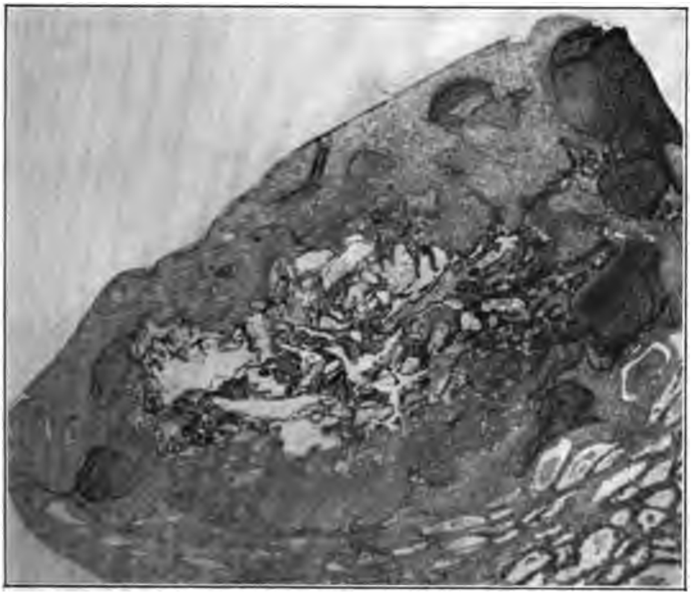

FIG. 12.—Lateral end of ovum, consisting entirely of chorionic villi deeply embedded in the compact layer of the decidua basalis. In lower right hand corner large gland spaces of spongy layer.

Figure 12 presents a striking contrast to the previous sections. All trace of chorionic membrane and cœlomic cavity have disappeared, and all that is left of the egg is an irregular mass of chorionic villi embedded in the depths of the decidua. Above, the egg is separated from the uterine cavity by a tolerably thick layer of compact decidua; while below, it is in contact with the spongy layer of the decidua basalis, the lumina of whose proliferated glands is filled with secretion. In this section there is marked proliferation of the chorionic epithelium at the ends of the villi, and the same relations exist between fetal and maternal tissue as are observed in normal placentation. In other words, the egg appears to be normally fixed in this location, in which the only deviation from normal consists in the absence of fetal vessels and the myxomatous stroma of the villi, and the presence of large hemorrhagic areas scattered through the decidua outside the area of implantation.

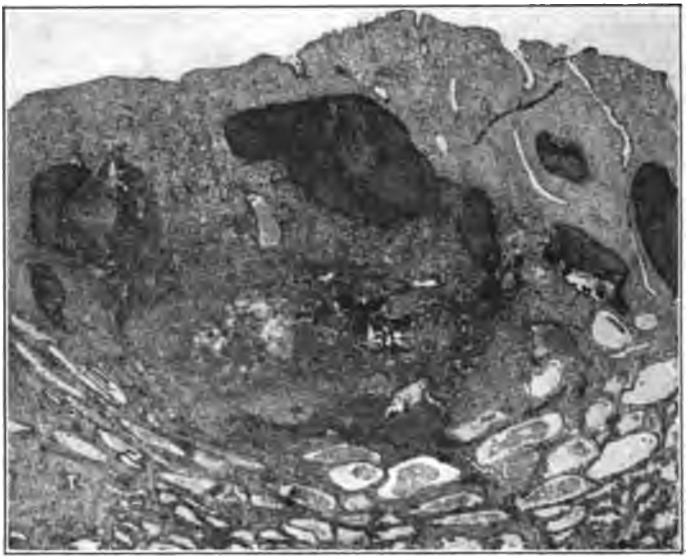

FIG. 13.—Extreme end of ovum, represented by the tips of a few villi in the lower third of compact layer. Note relative thickness of this layer and its intact surface epithelium, as well as the hypertrophied glands of the spongy layer.

Figure 13 is a section through the extreme end of the specimen, and shows a thick layer of compact decidua with the characteristic spongy layer beneath it. All trace of the egg has disappeared, except a few isolated chorionic villi in the depths of the compact layer. Except for the presence of a number of hemorrhagic areas this layer presents a normal appearance, and attention is particularly directed to its intact surface epithelium and to the numerous gland ducts making their way from it toward the spongy layer.

Expecting to find a normal egg normally implanted in the decidua, I was very much at a loss, when I first began to study the series of sections, to understand how one end of the egg came to lie free in the uterine cavity, as shown in Figs. 4 and 5; but upon going through the entire series I was enabled so to reconstruct the specimen as to obtain a rational explanation for the conditions observed.

Roughly speaking, it was found in the first 180 of the 900 sections that the egg lay free in the uterine cavity and consisted merely of a chorionic membrane devoid of villi, which enclosed a relatively large cœlomic cavity, and that the former was separated from the surface of the decidua vera by coagulated blood. In the next 120 sections the ovum was found to be enclosed between a tolerably thin decidua capsularis on one side, and a thin layer of compact decidua on the other, which was separated from the main compact layer by a norrow slit covered on either surface by cuboidal epithelium. In this area a few villi projected from the periphery of the chorionic membrane.

In the next 300 to 350 sections, the decidua capsularis was thicker and the lower surface of the egg directly in contact with the compact layer of the decidua basalis, which became thinner as one went on, so that glands of the spongy layer of the decidua eventually became visible. At the same time the chorionic villi became more abundant and more complicated in structure, while the cœlomic cavity became smaller and smaller and eventually was reduced to a small slit. Following this, the remaining sections showed that all that remained of the egg were deeply embedded chorionic villi, and that in the sections following that represented by Fig. 13 even these had disappeared. In this portion of the specimen the decidua capsularis was relatively thick, while the opposite surface of the egg was in contact with the spongy portion of the decidua basalis.

I have attempted to reconstruct these conditions in a diagram, Fig. 14, which roughly represents the relative participation of the several portions of the egg: and, in its study, it is well to bear in mind that the sections were cut at right angles to the plane represented in the diagram. I think that it clearly shows that the proximal pole of the ovum lies free in the uterine cavity, while its other four-fifths are enclosed within the compact layer of the decidua and come nearer and nearer to the spongy layer as the distal pole is approached.

From the diagram it is also clear that we have to deal with a very early abortion in progress; as one pole of the decidua capsularis has ruptured and the corresponding pole of the ovum is being extruded through the defect; while the opposite pole still retains its organic connection with the adjacent decidua.

For some time it was most difficult to find an explanation for the presence of the pseudo-capsularis upon the outer surface of the proximal third of the ovum, where it was separated from the compact layer of the decidua by a space lined on either surface by cuboidal epithelium. To my mind this may be explained satisfactorily by supposing that the ovum had originally been implanted upon the decidua vera in the neighborhood of one of the numerous furrows, to which its mammelonated appearance is due. In other words, the implantation had occurred upon a mush-room-like projection of decidua, and as the ovum increased in size one pole approached the tip of the projection and caused extreme thinning and eventual rupture of the decidua capsularis in that locality.

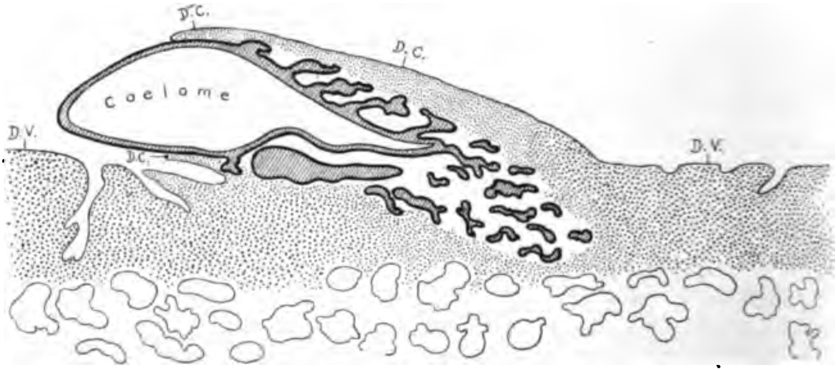

Fig. 14.—Diagram constructed at right angles to the plane of the serial sections. Showing the ovum partly free in uterine cavity, and partly embedded in the compact layer of the decidua.

D. C.—Decidua capsularis.
D. V.—Decidua vera.

Whether implantation occurred upon such a projection or not, I am unable to state, but such any supposition would afford a satisfactory explanation for the findings in the sections, as well as for the condition represented in the diagram.

Unfortunately, nothing in the specimen affords a clue as to the actual cause of the rupture of the capsularis, and it is impossible to state whether the excessive hemorrhage which had taken place into the decidua produced the accident by suddenly increasing the pressure within the ovular capsule, or was merely secondary to the rupture.

In any event, the complete lack of development of the embryo, the absence of fetal vessels in the chorionic membrane and villi, and the hydatidiform changes in the stroma of the latter, make it clear that the ovum was hopelessly abnormal, and that abortion was sooner or later inevitable. Furthermore, the specimen may be regarded as a striking configuration of Mall's dictum that primary abnormalities of the ovum are probably the most frequent cause of abortion, and that the attempted abortion in this instance must be regarded as a conservative effort on the part of Nature to rid the organism of a structure which had failed to accomplish its allotted task.

In conclusion I desire to express hearty thanks to Dr. George L. Streeter, Director of the Carnegie Laboratory of Embryology, for placing its facilities at my disposal for the preparation and study of this specimen, as well as for many other kindnesses.

1128 CATHEDRAL STREET.

EXPERIMENTAL REPRODUCTION OF PREMATURE SEPARATION OF THE PLACENTA.*†

BY

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Two years ago I began a series of experiments in search of the underlying cause for premature separation of the placenta. At first it appeared that the intramuscular lesions which are found in the uterus in the more pronounced cases of this complication might depend upon acute distention of the organ with blood; but this possibility was ruled out by the negative results when the pregnant uterus of a dog was distended artificially with fluid. Later the findings at an operation upon a patient suffering from a myoma with a twisted pedicle suggested that the hemorrhages into the myometrium depend upon a disturbance of the uterine circulation. Following this clue, experiments upon pregnant rabbits were successful in reproducing the lesions found in women suffering from this complication; ligation of the veins on one side of the pregnant uterus caused premature separation of the placenta and also the characteristic pathological changes in the myometrium. Additional observations during the past year have demonstrated that similar lesions are provoked by simple rotation of the uterus. The effect of experimental rotation of the uterus upon the urinary excretion also has been studied. Though these observations are as yet incomplete, they already indicate we shall be forced to conclusions somewhat out of harmony with current views.

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* Read at a meeting of the American Gynecological Association, Atlantic City, June 1 –17, 1919.

† From the Department of Obstetrics and Gynecology, Yale Medical School.

Of course many hypotheses have been advanced to explain premature separation of the placenta. Without doubt, trauma or traction upon a short umbilical cord occasionally causes the detachment, but in most instances the explanation is not so clear, and therefore the complication has been attributed to a lesion at the placental site or to a toxemia of pregnancy. Some authorities regard inflammatory or degenerative changes in the decidua as the causative factors. Others emphasize the presence of hemorrhage into the myometrium or of thrombi in the intervillous spaces and decidual sinuses. Probably the most generally accepted theory explains the premature detachment as secondary to nephritis.

Most of these explanations are hypothetical and none has proved wholly satisfactory since none is applicable to all cases. Degenerative and inflammatory changes in the placental site are inconstant, and likewise albuminuria and symptoms of toxemia may be absent. In short no satisfactory explanation for the lesion has been given and on this account the problem offers an attractive and interesting field for experimental investigation.

In beginning the experimental study our first thought was that the lesions in the myometrium might be caused by the acute distention of the uterus due to profuse hemorrhage. Accordingly, the following experiment was performed upon a pregnant dog. Under ether anesthesia, laparotomy was done, a cannula was inserted into the pregnant horn of the uterus and sterile salt solution forced into the viscus until it was on the point of bursting. The cannula tract was then ligated and with some difficulty the abdomen was closed, for the distention of the uterus interfered with the approximation of the edges of the abdominal incision.

No ill effects followed this operation; the next day the animal appeared to be well. Forty-eight hours after the operation, when the abdomen was again opened abortion was found to have taken place. The previously distended "horn" was entirely normal and without sign of injury. Therefore, while in a sense the result was negative, this experiment plainly taught that even an extreme and acute increase in the intrauterine pressure did not cause extravasation of blood into the myometrium and dissociation of the muscle-fibers. In other words, simple distention does not explain the uterine lesions in cases of premature separation of the placenta.

Our interest in the problem was renewed a few weeks later when, from the treatment of a gynecological patient, we got a clue which led to further experimentation yielding results of a positive nature. The patient in question entered the hospital suffering from symptoms referable to a myomatous uterus. At the operation multiple pedunculated myomata were found and the superficial appearance of one of the tumors, the pedicle of which was twisted, bore a striking resemblance to the uterus in the more pronounced cases of placental separation. When the tumor was bisected no areas of necrosis were found, but hemorrhagic lesions like those just mentioned in the uterus were distributed throughout the myomatous tissue.

Histological sections from the tumor showed an intense hemorrhagic infiltration, edema and, in many areas, dissociation of the muscle-fibers. The larger veins were empty but the smaller ones were engorged with blood. Microscopically, then, the lesion in this tumor was identical with that in the myometrium of cases of premature placental separation. And since the acute changes in the structure of the tumor were evidently caused by a disturbance in its circulation, the question arose as to whether the corresponding lesions in the pregnant uterus might not also be due to a similar disturbance. Furthermore, the absence of necrosis in the myoma as well as the presence of venous engorgement suggested that blocking of the veins, rather than of the arteries, was the responsible factor in the acute pathological process.

With this hint investigation was begun to determine what are the effects upon the pregnant uterus when the venous flow is blocked. In rabbits at various periods of pregnancy the veins leaving one of the two uterine horns were carefully dissected from the adjacent arteries and ligated. The other "horns" were not disturbed and, therefore, in each animal we had at the same time both experiment and control.

The veins of the rabbit uterus belong to one of three groups; namely, (1) the ovarian; (2) the mesometric; and (3) the uterovaginal. Consequently, a thorough study of the problem required that several types of experiments should be performed. In the first series, each of the three groups of veins alone was ligated and in these circumstances there followed a temporary cyanosis of the "horn" and slight engorgement of the constricted vessels. However, the circulation quickly readjusted itself and the pregnancy suffered no damage.

In the second type of experiment two of the above groups of veins were ligated. Thus, in one animal the ovarian and the mesometric veins were tied, in another the ovarian and the uterovaginal, and in a third the mesometric and the uterovaginal veins. In all these cases the results were similar to those obtained when a single group of veins was tied. The collateral circulation, it appeared, was adequate to prevent serious damage to the pregnancy even when two of the three vein-groups were thrown out of function.

The third type of experiment consisted in ligating all three groups and blocked completely the return of venous blood through the vessels, leaving one "horn" of the uterus intact. This treatment was followed by very definite and positive results, and the same phenomena were observed each time the experiment was repeated.

One after another, as the veins were tied, they became engorged with blood and finally the entire uterine "horn" was deeply cyanosed. It was distended and fluctuant at first, but ultimately grew tense and firmly resisted pressure. After these initial observations the abdomen was closed but reopened in from two to four hours, unless meanwhile the animal had died. At the end of this time, in surviving animals the untreated "horn" was a deep purple in color, was enlarged about twice its former size and was quiescent, muscular contractions having ceased. When incised the uterine cavity was found filled with blood which surrounded the unruptured fetal sacs; the placentæ were partially or completely separated from their attachment; and minute extravasations of blood were visible in the myometrium. Hemorrhage and shock, apparently, were the cause of death in the animals which did not survive the experimental ligation of the veins.

Microscopic sections from a number of zones in the distended uterine horn demonstrated that the mesometric veins, the decidual sinuses, and the intervillous spaces were engorged with blood; hemorrhagic extravasations also were common in the decidua. At various points the uterine wall presented similar extravasations, as well as dissociation of the muscle-fibers; blood clots intervened between the placenta and its attachment to the uterine wall. Obviously, these are the same lesions as those found in women suffering from this complication of pregnancy. In other words the experimental reproduction of premature separation of the placenta has been accomplished by ligating the veins which conduct the blood from one side of the bicornute uterus.

It is improbable of course that a circulatory obstruction of the same extent occurs spontaneously. Accordingly, additional experiments were performed to determine if similar lesions are provoked when the uterine circulation is disturbed by simple rotation of the uterus. In the first series, the entire uterus was rotated twice about the long axis of the vagina, each horn being fixed in position by sutures passed through its peritoneal surface to the anterior abdominal wall. This experiment gave a positive result but since here also the obstruction to the circulation was excessive, a second series of experiments was made with a somewhat different technic. The cervical ends of the "horns" were first immobilized by sutures passed through each lateral fornix to the abdominal peritoneum. One "horn" was then rotated about the long axis of the vagina 180° and fixed by sutures as before; the opposite horn was undisturbed. Following rotation the affected horn became slightly cyanosed and the vessels were temporarily congested. After preliminary observations of from fifteen to thirty minutes, the abdomen was closed, but was reopened after an interval of four hours. At this time the horn was still moderately cyanosed, although the bluing was less noticeable than in the previous experiments in which the three groups of veins were ligated. When incised the uterine cavity was free from blood and hemorrhagic extravasations into the myometrium were lacking, yet the placentæ were partially detached.

Microscopic sections taken from various zones in the "horns" showed an engorgement of the mesometrial vessels and decidual sinuses. The placenta was partially separated and blood clot was present between it and its site of attachment. In other words, lesions were produced which are similar to those provoked when the veins are ligated. And it is fair to assume that when the uterus is rotated, because of their less resistant walls, the veins are constricted earlier and more completely than the arteries.

Although hemorrhagic extravasation into the decidua and partial separation of the placenta were invariably present, hemorrhagic lesions of the myometrium which were uniformly found when the veins were ligated were noted only once. They were present in an animal of the first series which was delivered shortly after the conclusion of the experiment. It appears, therefore, that the primary lesion following obstruction to the venous outflow is an engorgement of the decidual sinuses and hemorrhagic extravasations into the decidua; and that a decidual hematoma inaugurates the separation of the placenta. Extravasation of blood into the myometrium with dissociation of its fibers occurred as a secondary lesion in the instances where the circulatory disturbance was excessive. Such a course of events accords with the clinical picture seen in the less pronounced types of placental separation which are accompanied by hemorrhage and yet by a satisfactory retraction of the uterus following the completion of the third stage.

The presence of albuminuria in certain cases of placental separation has led many authorities to attribute this complication to a nephritic toxemia. However, albumin is not uniformly present nor are other clinical signs of toxemia constant. The question arises, then, may not the occasional presence of toxic symptoms be the result of secondary changes in the kidney rather than the indication of a primary renal lesion?

With this possibility in mind further experiments upon pregnant rabbits have been made to determine whether rotation of the uterus leads to abnormalities in the urinary excretion. Although further observations are required and indeed have already been undertaken, in several animals following the experimental treatment of the uterus described, we have seen frank symptoms of toxemia develop. These symptoms probably depend upon a complicated physiological process set in motion by the disturbance in the uterine circulation. Analogous changes doubtless occur in women suffering from premature separation of the placenta and experimental evidence hints that the albuminuria which sometimes accompanies this complication is secondary to a disturbance in the uterine circulation, not to a primary nephritic toxemia.

What blocks the veins in human pregnancy is, of course, open to speculation but the autopsy findings in two cases and the clinical findings in a third bear directly on this problem. Thrombosis of the veins has been described by Young in a case of premature separation of the placenta and in this instance there were also hemorrhagic lesions in the myometrium. However, since thrombosis of the veins is not mentioned in the reports of other cases evidently it is uncommon.

Of greater importance are the findings in a case recorded by Glinski. In this instance, his patient, a woman nearing term, was seized with acute abdominal pain and died before surgical treatment was possible. At autopsy the uterus was deeply cyanotic and with a relatively long cervix was found to be rotated out of its normal position 270° to the right. The uterine cavity contained fluid and clotted blood; the attachment of the placenta was partly broken, the myometrium was purple and the venous engorgement of a notable degree.

Identical lesions were discovered by Mazzini in the pregnant half of a didelphic uterus. His patient was admitted to the hospital complaining of abdominal pain and a sudden enlargement of the uterus. The pulse was 130 and signs of concealed hemorrhage were present. At operation, the hemiuterus, which was of a volume corresponding to term, was of an intense livid color and rotated 180° to the left. Upon incising its cavity 500 c.c. of serosanguineous fluid escaped. The placenta was partially detached and there was a hemorrhagic infiltration of the myometrium with dissociation of its fibers. Obviously, in both cases the lesions depended upon an obstruction to the uterine circulation.

A recent observation in this clinic allows us to view the problem from a different angle. During a Cesarean section performed at term for the relief of dystocia following ventral fixation of the uterus, we found a band of adhesions resulting from the previous operation extending from a point just above the insertion of the right tube to a point on the anterior abdominal wall. This artificial ligament, by traction, had so rotated the gradually enlarging uterus that the right cornu lay just behind the symphysis while the left cornu was directed toward the sacral promontory. Except for this unusual position the uterus presented a normal appearance. Following the delivery of a living child supravaginal hysterectomy was performed.

The placental attachment was intact and gross and histological examination of the myometrium failed to reveal hemorrhagic lesions. If we recall the circumstances under which torsion occurred the interpretation of the negative findings becomes clear. The uterus in this instance was not suddenly rotated from its normal position; but the torsion progressed slowly as pregnancy advanced. And, as there was not an acute circulatory disturbance but a gradual constriction of the vessels, the opportunity for readjustment of the circulation was afforded, and hemorrhage into the myometrium and placental separation did not occur. This negative observation it seems to me is pertinent; for, in the first place it demonstrates that the increased mobility of the pregnant uterus permits a torsion of at least 90° and probably more; secondly, it supports the hypothesis that premature separation of the placenta depends upon an acute blocking of the vessels.

Since the complication in question is most common in multiparous women with relaxed abdominal walls, the circulatory disturbance likely depends upon some mechanical factor which arises through the absence of proper abdominal support. Toneless muscles and a diastasis of the recti permit an increased mobility of the pregnant uterus favoring torsion or some other unfavorable position. Thus the vessels of the broad ligament may become kinked or stretched, and since the veins have less resistant walls than the arteries the venous flow would be earlier and more completely obstructed. This view was borne out by my experiments where ligation of the veins produced lesions of the uterus like those in women.

CONCLUSIONS.

The intramuscular lesions of the uterus in premature separation of the placenta are not provoked by an acute distention of the uterine cavity. They depend upon obstruction of the uterine circulation. When such an obstruction is provoked artificially in rabbits by ligating the veins of one "horn" of the bicornuate uterus, the lesions produced are identical with those in women suffering from this complication of pregnancy. Similar lesions are also observed following simple rotation of the uterus. The primary lesion in placental separation is an engorgement of the decidual sinuses and a hemorrhagic extravasation into the decidua; the intramuscular hemorrhages occur as a secondary lesion in those instances where the circulatory disturbance is excessive. Probably the excessive mobility of the uterus predisposes to a similar though spontaneous acute constriction of the veins of the broad ligament in women advanced in pregnancy. The albuminuria which sometimes accompanies placental separation probably is secondary to the disturbance in the uterine circulation and not an indication of a primary nephritic toxemia.

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A PRELIMINARY NOTE ON THE VALUE OF REPEATED SMALL BLOOD TRANSFUSIONS IN BLOOD-STREAM INFECTIONS.*†

BY

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(With eight charts.)

BACTEREMIA and thrombophlebitis in postpartum patients have an extremely grave prognosis. About 23 per cent. of the bacteremias due to the streptococcus end fatally, while in thrombophlebitis only about 50 per cent. of the women recover. Such a prognosis justifies the trial of any rational therapeutic adjunct which may improve the results of treatment. In bacteremia we have the presence of bacteria in the blood. These are usually some strain or variety of the streptococcus or staphylococcus. The cocci, with their toxins produce a rapid dissolution in the cellular elements of the blood tissue, destroying the red cells as well as the leukocytes. As they pass along through the heart, the liver and kidneys, these cocci with their toxins cause degenerative changes in the heart muscle, fatty degeneration in the liver and cloudy swellings in the kidneys.

Since the general introduction of anerobic methods of culture by bacteriologists, we have found a larger number of blood-stream infections than formerly, when a less perfected technic was in practice, yet in our experience positive culture is demonstrated in less than 15 per cent. of the cases in which blood cultures are made.

It must be generally accepted that virulent bacteria with hemolytic powers rapidly destroy the blood resistance. This is shown in the very rapid diminution in the red cell count, the reduction in the percentage of hemoglobin, and the absence of leukocytosis, which are characteristics of the blood picture in bacterial invasion of the blood stream.

In postpartal infections, entrance is gained into the blood stream by one of two routes. First; by lymphatic extension from wounds of the genital tract, or by an extension from an endometritis, in which the bacteria are so virulent, and their progress through the uterine and parametrial lymphatics so rapid that they do not excite a reaction in the tissues. Second; by direct invasion of the venous radicals and sinuses, and extension to the blood stream by a metro-thrombophlebitis. In these cases there is no local exudate or no evidence of local reaction against the invading bacteria, except a slight edema of the contiguous tissues—consequently the bacteria enter the blood in pure culture, and once in the blood rapidly multiply and cause rapid destruction of the cellular elements.

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Clinically, we must regard the blood as a tissue, with all of the characteristics of other tissues. Hence it is obvious that the introduction of bacteria, and their toxins into the blood stream must result in either a cell reaction or a cell destruction. Bacteriologists have shown us that blood serum makes a good culture medium for bacteria, hence there is no way by which nature can overcome the rapid propagation of bacterial life, except by increasing the leukocytic resistance. Unfortunately this is not possible in bacteremia, where the organism is hemolytic, for the cell destruction is rapid and it is not exceptional to see the hemoglobin reduced 20 or 30 per cent. or even 50 per cent. in the course of a week or ten days. Furthermore in these bacteremias we seldom find a leukocyte count of more than 8000 or 9000, usually less.

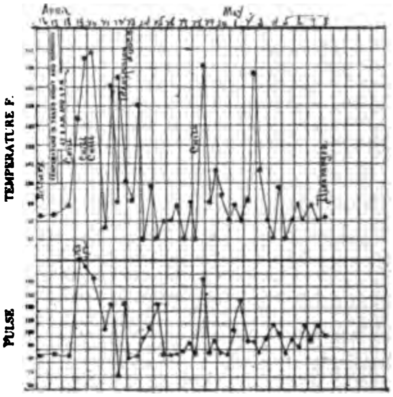

FIG. 1.—Chart of temperature and pulse observations from a case of puerperal endometritis with streptococcus blood-stream infection White cells 6500 before transfusion, 18,000 twenty-four hours later, remaining relatively high during convalescence.

Various attempts have been made by the profession to check bacterial growth and to destroy the bacteria already in the blood by the introduction into the blood stream of anti-bactericides, various antiseptics, foreign material, blood dilution, and finally by the introduction of vegetable matter. Recently Potel has suggested injections of a 10 per cent. solution of peptone in distilled water, using 10 c.c. of the solution daily by intramuscular or intravenous injection. The latter however, produces considerable reaction. Only last year before this Society, Chalfont and Miller reported a series of streptococcic infections which had yielded to the introduction of salvarsan into the blood. Our own experience with salvarsan, which has been used exactly as recommended by Chalfont and Miller in their paper, has not produced the results claimed by these writers. The more one thinks of the actual pathological processes which take place in the blood stream after the introduction of hemolytic bacteria, the more one must wonder how the introduction of salvarsan, can in any way affect the life and growth of these bacteria. On the other hand, we all know that *infection is arrested by the development of a leukocytosis.* We know that the leukocyte is a bacterial enemy, we know that it is a struggle of the fittest; *and whether the bacteria are killed by the leukocytes or the leukocyte destroyed by the bacteria, depends upon the supply of each.* It has therefore, appealed to us, that notwithstanding the poor results reported by Linderman, Garbat and others, from the employment of blood transfusions in the treatment of postoperative septicemias from general surgical causes, that the use of small repeated blood transfusions, offers the only plausible treatment in these blood infections. Transfusion in infection, would seem to serve the double purpose of lessening the secondary anemia and supplying normally active leukocytes for temporary defense;

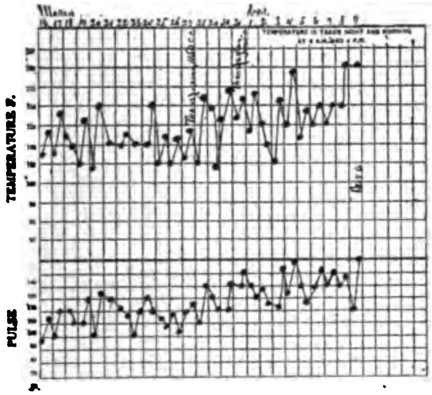

FIG. 2.—Chart from a fatal case of post-abortal streptococcemia. Transfusion gave temporary improvement, raising leukocyte count from 8000 to 20,000. Hemoglobin reduced to 20 per cent.

and besides this transfusion permanently raises the blood pressure, which helps to restore the functional activity of the organs which bear the brunt of the defense. In an analytic study of the poor results occurring among the surgical septicemias, we have become convinced that it is because the blood resistance is not increased at a sufficiently early date, that transfusion instead of being used early in a rational way, has been used as a last resort, after the bacteria have multiplied and with their toxins have permeated the heart, liver and kidneys. Immunized blood transfusions have been shown to be of distinct value in chronic infections, but are impossible in acute. *However early and repeated small transfusions allows the patient to immunize herself.*

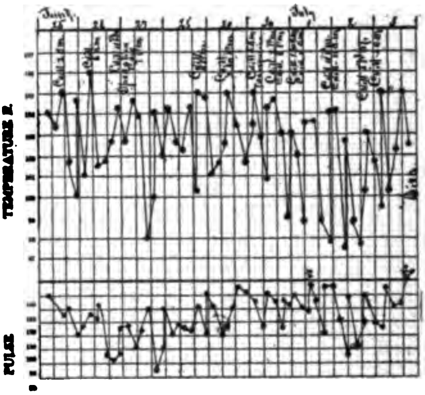

FIG. 3.—Chart from a fatal case of streptococcic pelvic thrombophlebitis. Ligation of ovarian and internal iliac veins. Blood culture previous to operation showed 500 colonies to the c.c.

Many operators have been deluded into the belief that when a large quantity of blood is poured into the circulation they get the effect from the quantity. This is not true, for over-transfusion not only embarrasses the pulmonary circulation, but engorges the liver and spleen and thus interferes with their functional activity. Instead of that, we must appreciate that the effect of transfusion is but temporary, that the blood cells thrown in are rapidly destroyed, and that the real value is from a *stimulation of the tissues to increased cellular proliferation.*

We have found that within four or five days after a transfusion, the hemoglobin shows a marked reduction from the percentage immediately after the operation; that while the leukocytes are immediately increased they rapidly fall, *and only when the leukocytosis can be maintained is the prognosis improved.* On this basis, accepting these clinical facts as truths, for they have been verified by repeated observations, we have during the last year, been studying the effects of repeated small transfusions of citrated blood on bacterial invasions of the blood stream. The advantages of citrated blood are obvious in the very sick, not only because of its simplicity, but from the fact that the patient may remain in bed and thus be rid of psychic disturbances attending the direct methods. So far we have treated four cases of thrombophlebitis, with one death and seven cases of bacteremia, with one fatality. The two fatal cases were in our opinion, too far advanced, for as the number of colonies of bacteria to the cubic centimeter in the patient with staphylococcemia, were so numerous—500 colonies to the c.c., that it is doubtful if anything could have changed the outcome. In the fatal instance which occurred from thrombophlebitis, the hypogastric and spermatic veins had been tied before the transfusions were given. This case as have all of the others, showed a marked temporary improvement following the transfusion.

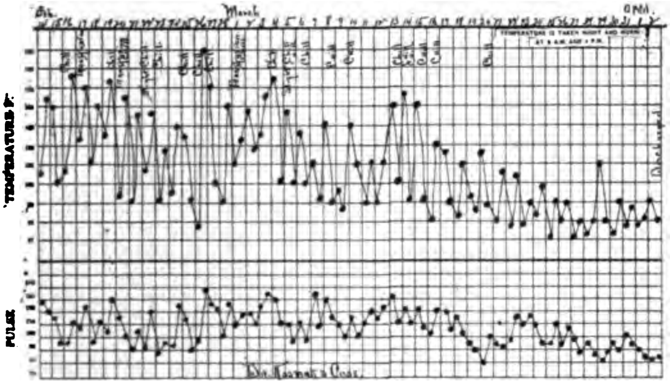

FIG. 4.—Chart from a case of thrombophlebitis successfully treated by conservative measures and transfusion. (*Case record contributed to this series by Dr. G. W. Kosmak.*)

In thrombophlebitis the advance of the disease is dependent upon the liquefaction of the clot by bacterial invasion of it. While cellular elements of the blood are directly responsible for the defensive additions to the clot should the bacteria break through the barrier, *the chill and the temperature are the clinical evidence of bacterial advance; the intermission in temperature, the sign that nature's defenses have temporarily arrested the further bacterial invasion.*

In thrombophlebitis more than half of the cases tend to subside and recover spontaneously, yet with a mortality of nearly 50 per cent. the employment of any rational procedures which will decrease the fatalities seems justifiable.

C. Jeff Miller, in an exhaustive résumé of the subject and the results of operative treatment in 197 cases, proves conclusively the tendency of the thrombosis to limit itself to one vein, usually the spermatic. He further shows that there is a marked difference as to the frequency and location of the thromboses when viewed at operation and at necropsy. Of the 197 cases, 15 were treated by the extra and 182 by the transperitoneal operation. The gross mortality was 51.6 per cent. The corrected mortality was 33.9 per cent. From this report and the work of Turenne it would seem that *ligation should be admitted as a rational procedure*, when the septic lesion is directly diagnosed and there is no persistent bacteremia between chills, and the genital and general clinical examination does not show any visceral foci which indicate generalization of the infection. Nevertheless, it must be remembered that at best direct examination gives doubtful results and the diagnosis must be based largely on the clinical picture.

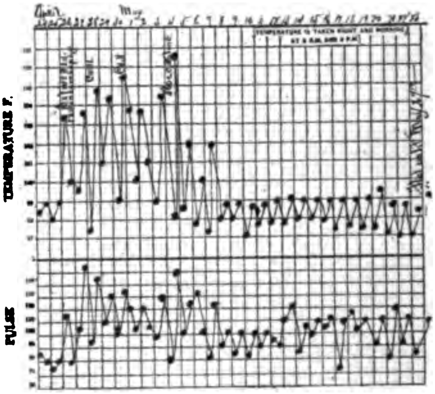

FIG. 5.—Chart from a case of thrombophlebitis with no associated bacteremia. Impressive effect of transfusion both on clinical picture and blood count.

Ligation is contraindicated in persistent bacteremia or confirmed septicopyemia, or where there are uterine or juxtauterine lesions, hence it will be seen that *there is a large class of cases unsuited to and that will not be benefited by operation but which cannot be allowed to die without treatment*, and it is in these, that we feel that the field of transfusion may be extended.

The lymphatic form of bacteremia usually develops from an endometritis, the bacteria pass along the lymph spaces of the uterus and the broad ligaments into the blood, or out on to the surface of the peritoneum causing a peritonitis.

The vascular form of bacteremia begins as a metrophlebitis, usually in the placental site, with thrombosis in the veins. From these infected thrombi the bacteria get into and multiply in the blood reaching the brain, the cord, the joints and the endocardium.

The veins of the placental site are filled with large thrombi, which are swarming with bacteria. The bacteria erode the endothelium of the vessel, fibrin is deposited on the roughened surfaces, the lumen is occluded, and the process advances through the venous plexuses of the broad ligament into the spermatic and iliac veins.

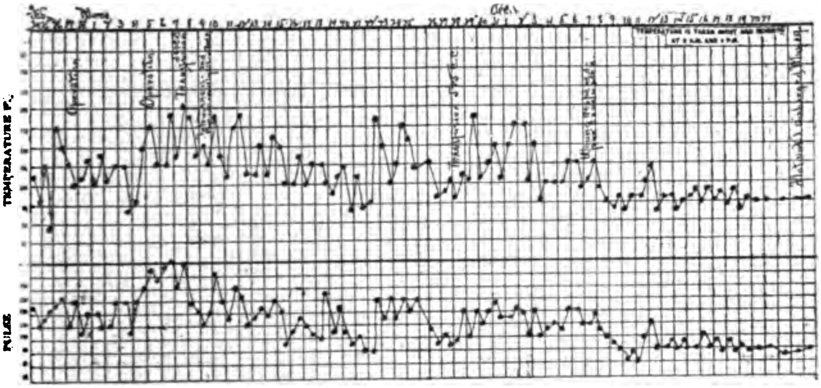

FIG. 6.—Chart from a case of labor with forceps delivery, developing a staphylococcus bacteremia complicated by localized extraperitoneal abscess. Opened Feb. 27 and Mch. 5, 1919, no improvement until transfused.

From the surfaces of these thrombi bacteria are liberated into the blood stream, and if they are strong enough to multiply in it, a fatal bacteremia will result.

In these blood stream infections we have used a combination of supporting measures, which together seem to materially improve the patient's resistance. Of first importance as a supportive measure is fresh air—our septic cases are treated on the roof in the Fowler position where they are kept day and night—this favors sleep and improves the appetite. The Fowler position produces gravity drainage and aids nature in her attempt to isolate the pelvis from the general peritoneal cavity. The next is the free exhibition of fluids. We do not believe that sufficient fluid can be taken by the stomach to maintain the kidney secretion in sepsis; hence we employ enteroclysis, using what we call the "Harris drip," which may be continued for days without irritation. A douche can with a short piece of rubber tubing connected with a rectal tube, and an electric (carbon) bulb constitute the required apparatus. The can is placed at such an elevation that the bottom of the can is on a level with the symphysis pubis, and half filled with a solution of bicarbonate of soda and glucose, the contained fluid is kept warm by placing an incandescent electric light (carbon) in the can in contact with the contained fluid. The glucose-soda solution runs into the rectum and sigmoid, until the fluid within the bowel has reached the same level as the fluid in the can; this stimulates the passage of gas, which

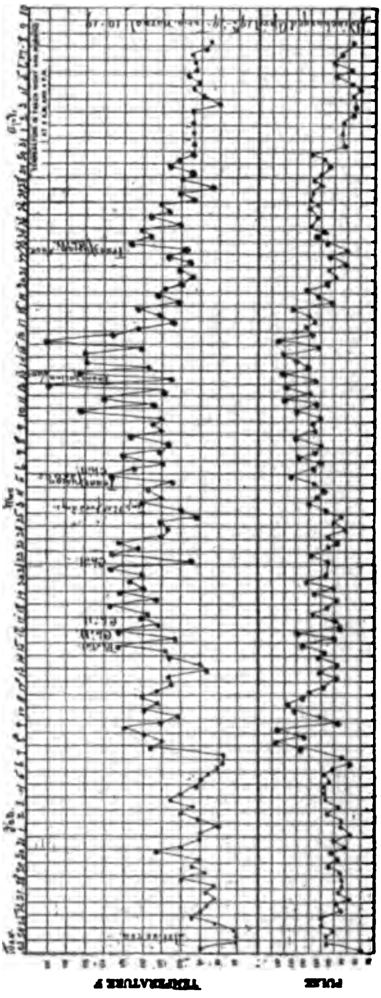

FIG. 7.—Chart of a case of metro-thrombophlebitis with metastatic foci in parotids and lung. Streptococcus brevis in pus, sputum and blood. Transfusion increased leukocyte count from 6500 to 22,000.

is passed back into the can, the fluid is slowly absorbed from the rectum and colon—depending on the force of the heart action.

The advantages of using the fluid in this way is that it relieves the tympanites, stimulates the kidney secretion and relieves the thirst, besides combating the acidosis and toxanemia which are always present in septic infections.

All medication is given hypodermically, as we believe that the stomach should be kept for nourishment, and not upset by drugs; furthermore, the absorption from the stomach is retarded when the woman is very sick.

Small transfusions of citrated blood are given every third day, care being taken not to use the same donor for more than two transfusions. Quantities of 250–300 c.c. are used and given very slowly.

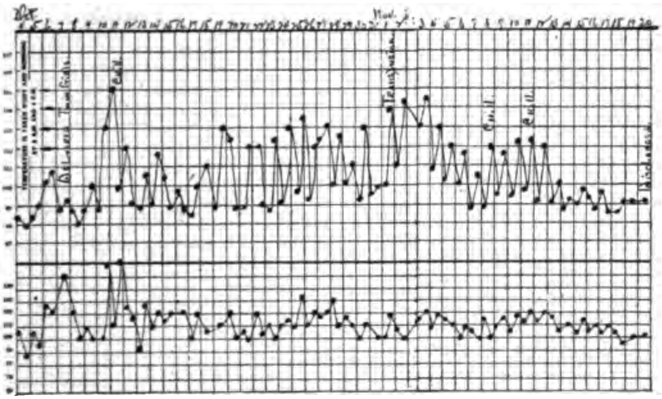

FIG. 8.—Chart from a case of streptococcus infection, showing progressive improvement from date of transfusion. (*Case record contributed by Dr. L. S. Schwartz.*)

The transfusion is preceded by a hypodermic of a third of a grain of morphine. We have found that this materially diminishes the severity of the reaction. However, some reaction occurs in 60 per cent. of the cases. The blood injections are best given in the morning when the temperature is down.

Our experience is limited—but so far has been such as to encourage us in the continuance of the method. Detailed blood studies have been made before and after each transfusion, the leukocyte count has been invariably increased, and the blood pressure has been raised. Temporarily the red cells and hemoglobin have been increased; these, however, have shown rapid destruction in the succeeding forty-eight hours. *The pulse in the favorable cases has always* *improved in quality and rate*, whether the temperature has shown any favorable change or not.

The charts of the cases shown, in our opinion, evidence the value of this addition to our armamentarium in the management of severely septic cases.

By the courtesy of Dr. Geo. W. Kosmak and Dr. Leo S. Schwartz, I am able to include charts of two cases reported by them.

CONCLUSIONS.

After the bacteria have gained entrance to the blood stream the cellular elements of the blood are rapidly destroyed. The heart, liver, spleen, and kidneys show definite pathology and acidosis develops.

Small repeated blood transfusions increase the cellular elements, stimulate resistance and raise the blood pressure and hence add to the natural defense.

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FURTHER OBSERVATIONS ON THE RADIUM TREATMENT OF UTERINE CANCER.*

BY

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(With fourteen illustrations.)

Two years ago, in reporting to this Society the results of the treatment of uterine cancer during 1915 and 1916 at the Memorial Hospital, New York, a plea was made for a more standardized technic and a plan was presented that had had some six months' trial. During the past two years this technic has been more fully developed, and it has been used in the majority of the cases. There has been of course variation in dosage depending upon the pathological condition.

Although the War has prevented both in this country and abroad any considerable amount of research, especially on the physical side of the problem, nevertheless the clinical improvements so frequently seen in both the malignant and nonmalignant conditions in the gynecological field have so demonstrated the value of this substance that it must now be considered one of our most valuable therapeutic resources. As a matter of fact, the status of the radium treatment of cancer has so considerably changed that in place of doubt and skepticism on the part of the profession, many of the Medical Boards of the various hospitals have already obtained or are negotiating for a supply of the element or its salts.

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*Read at a meeting of the American Gynecological Association, Atlantic City, June 14-17, 1919.

This will no doubt draw into the field many with poor training from a gynecological standpoint, for there seems to be a tendency to turn the radium work over to the röntgenologist, and I look for a considerable reaction toward operative treatment when the results of curative attempts by these new workers come to our knowledge. Particularly at this time, we should be careful not to make any generalization or statements concerning radium that are not of the most conservative nature so that we may advance toward the goal of ultimate success in the control of uterine cancer without any setbacks due to our enthusiasm.

Having conducted nearly two years of the work with only small quantities of radium at my disposal, I have reached the conclusion that the problems confronting the man possessing the small amount of radium salt are essentially different from those presented to the holders of several grams. With the small amount, in order to produce any effect at a distance from the applicator, it is necessary to leave the radium in position for such a length of time that there is a local necrosis. This is a serious affair because of the proximity of the bladder, rectum and ureters. In treating malignant conditions the possessor of 100 or 200 mg. of the salt would do well at the present time, at least, to confine himself to the palliative treatment of inoperable and recurrent cancer and to the preoperative-treatment of operable cancer.

If we interpret the operable case as one in which, besides the local lesion, there is no appreciable extension of the cancer cells into the lymphatics immediately adjoining the uterus, then in preoperative treatment two results may be accomplished; *first*, killing the dividing cells or rendering further division impossible, and, *second*, exciting a productive inflammation with localized endarteritis and replacement fibrosis. The first result is probably obtained at once and the second after periods varying from four to eight weeks and longer. If the surgeon will wait four weeks after the application he may find the local lesion in the process of healing and the cancer cells in the vicinity quiescent. Usually there is no difficulty in causing an apparently complete disappearance of the tumor tissue in the cervix even when it extends to a considerable depth; but in the operable case the argument might be used that the actual cautery at the time of the operation successfully removes this area. The practical difference is that the heat has destructive effects on the tumor cells only to a very limited distance, while the rays from the radium extend by dispersion to an incalculable distance, perhaps throughout the pelvis.

However, someone may develop a technic so that a small amount may be successfully used in treating deep parametrial involvement; and only recently Mr. Faille, our physicist, has suggested to me a method that may fulfill the required conditions.

The clinics that possess several grams of radium must justify their retention of such a supply by originating a technic that will by massive dose and cross-fire completely radiate the true pelvis without injury to the normal tissues at the time of the application, or later from too extensive a fibrosis.

From the peculiar arrangement of the lymphatics, cancer of the cervix tends to remain, perhaps more than any other form of internal cancer, limited to the tissues adjoining the primary site. While the invasion of the parametrial tissues may be by means of direct extension and along the course of the nerve trunks and veins, usually it extends along the fine lymphatics to the parametrial nodes located in the region where the ureter crosses the arteries, and thence to the larger group of nodes below the iliac vessels, or through the lymphatics of the uterosacral ligaments to the sacral glands. The early involvement of the parametrium or the parametrium and the nodes, according to the statistics of different observers, varies from 30 to 64 per cent., and it is worth while to recall the statistics as cited by Ewing where the lower limits are represented by Sampson's work with 37 per cent. involvement or Baisch with 36 per cent., to the higher limits of Kermauner with 57.5 per cent. and Schauta with 64 per cent. Experience has taught that removing the local lesion is not the most important factor in the operable case, and that in order to increase the number of cures our efforts must be directed toward the involvement, often impalpable and invisible, of the lymphatic tissue throughout the lower part of the pelvis. Hysterectomy, with the most extensive type of dissection and removal of the tissues of the parametrium, has been the effort in this direction, and although it is a procedure that carries a high primary mortality, it is a move in the right direction and has been until now the only hope for these sufferers. Nevertheless, the five-year cure period shows a discouragingly low percentage alive, and from a microscopical standpoint it must be admitted that even the boldest operator can hardly hope to remove all the lymphatic tissues about the base of the bladder, in the parametrium beyond the ureters or in the base of the uterosacral ligaments.

Radium emanation of the magnitude of a gram may be directed from within the vagina toward the parametrium and the entire pelvis radiated and effectively so, to a very considerable depth. But the problem is complicated, for to deliver an amount of the rays at a distance of 7 or 8 cm. that will be effective against the cancer cells, causes damage to the intervening and adjoining normal tissues. Physics may be able to mathematically inform us of the amount necessary at the point of application to favorable affect tissue at a given distance. Even then we have at least two other uncertainties—the resistance of the different types of cells, including the differences in the cells of the initial lesion, and those of the metastasis in the lymph nodes; and the changes in resistance in the tumor cells that result from a previous radiation, and finally the most vague and indeterminate of all, the possession by a given patient of an immunity, natural or acquired, against the further progress of the tumor. Biochemistry and serology may provide us with some information regarding these problems. In the meantime, and perhaps always, our radiation must be more or less empirically conducted, and definite assertions of what can be accomplished in treating any but surface ulceration must be dependent upon the results in a long series of cases of a like nature.

CLASSIFICATION OF THE CASES AND THE CONDITIONS UNDER WHICH THEY WERE ACCEPTED.

From January, 1915, to May, 1919, a period of four and one-third years, there were 356 cases treated for carcinoma. Of this number there were twenty cases that did not complete the treatment or were lost following the treatment. Three of these died following the first application. Fourteen were given but one application and failed to return. Three had the full treatment but did not return. This leaves 336 cases upon which the statistics of the report are based. Of this number there were 190 cases termed primary, that is, in which no operative procedure had been undertaken, except perhaps in a few cases a mild cauterization or curettage; 106 cases were recurrent cancer after a hysterectomy. Twenty-nine cases were treated after a Percy cauterization or an operation of the Percy type. Eleven cases were treated as a prophylactic measure following a hysterectomy. Fourteen cases were treated for malignant disease of the vulva, vagina or ovary. There were then 325 cases of carcinoma of the uterus in which there was evident malignant growth at the time the treatment was begun. Care will be taken in the table that accompanies this paper to indicate distinctly what became of the eleven prophylactic cases, and they will not, of course, be included in the cases that are listed as free of clinical evidence of malignancy as the result of treatment with radium.

All of the cases were followed both by letter and by actual examination at a return clinic that is held once a week at the hospital. As a rule, throughout the first year following treatment the individual case was seen at three or four weekly periods. After the first year the returns were placed at longer intervals. When the patient's condition became so bad that she was not warranted in making a trip to the institution, letters of inquiry were sent to her. Many were followed until they were in the very last stages of the disease and bedridden, and although the actual fact of the death is not in the record, owing to failure in obtaining replies from the family, for all practical purposes it may be assumed to have occurred. The untiring efforts of Miss Mollie McGillicuddy, the record clerk, have kept us in close touch with most of the patients; but a social service department would be a considerable asset, and I hope that in the near future one may be provided.

In the first year and a half of the work, as it was necessary to build up the clinic and get it fairly started, the selection of the cases was not as carefully carried out as afterward, and not a few were hopelessly involved at the beginning of the treatment.

At present we have fairly definite conditions outlined to guide us in the selection.

The most advanced cases frequently present a massive growth involving all of the pelvic organs, but with little or no ulceration in the vagina. This is especially true of the recurrences. In such cases an application of radium can hardly do more than cause some slight diminution in size, with possibly local sloughing, and the patient's condition cannot be said to have improved; in fact, it eventually becomes worse than before and considerably more painful from the contraction of the tissues and the pressure upon nerve endings.

Another type of the very advanced cancer is the ulcerating type, usually primary, with a deep cervical crater having undermined edges, so that the rectum and the bladder are in immediate proximity or involved in the growth. Treatment will relieve, or partially relieve, for a time the sloughing and discharge, but will almost invariably produce a fistula in the bladder or rectum earlier than it would otherwise occur.

Since 1916 these cases have been rejected in all but a few instances, and these prove the correctness of our position. The ulcerated cases receive much more palliation from the zinc chloride or the acetone treatment, as Herman Boldt very properly brought to our attention in the discussion of the cancer question at the last meeting.

Advanced cases, where the parametrium is deeply involved on one or both sides, providing that they are primary so that the cervix offers a location for the radium that is approximately in the middle of the tumor, are not infrequently greatly benefited, even to the extent in two instances of being free from signs of the disease for considerable periods. The most that can be expected is the healing or partial healing of the local lesion with consequent disappearance of bleeding and discharge and some retrogression in the size of the parametrial involvement. Not infrequently the further extension of the growth is behind the vaginal vault. The palliation is often so great that the patient gains in weight, has a good color and enjoys a longer lease of life in comparative comfort than did those patients who, prior to the use of radium, had only the benefits of curettage or cauterization. Usually within a year a relapse occurs and the case slowly progresses toward the end. The last months are apt to be very painful, due to the general fibrosis throughout the lower pelvis, but there is little or no discharge. It is amazing how long patients will live in a condition of this kind, and even though they develop rectal fistulæ they remain clean by careful attention to the bowels. Three such cases have lived a year in such a condition, and the process reminds me of the slow growing scirrhous carcinoma of the breast. Experience shows that in this class, even though there is some question of the beginning involvement of the bladder wall, a complete and deep raying of the entire lower pelvis gives the woman the greatest prolongation of life.

In this class fall the cauliflower outgrowths that often fill the vagina. In the former paper I stated that these cases would probably do better with preliminary cauterization, and I still hold to this belief. It is usually a simple and very spectacular procedure to remove the entire mass within a month by radiation with steel needles imbedded in the growth, but that much time is wasted in delaying the radiation of the deeper tissues of the pelvis, for the bulk of the tumor holds the radium away from the vaginal vault. The same may be said of the flat mushroom growth that is often 5 cm.

in diameter and occupying the location of the cervix in the upper part of the vagina. Theoretically these two types, provided the parametrium is not deeply involved, and in the cases that have come under my observation it often is not, should give the best prognosis in this class. Results have been disappointing. Further development of tumor tissue in the parametrium has been early in every case.

The border-line case by universal agreement most properly falls into the radium field. Here the lesion advances a short way into the parametrium on one or both sides, to an extent that is determined with difficulty, but the uterus is held somewhat by the indurated tissue; or the lesion of the cervix is not deep but overlaps to some extent upon the vaginal wall. In this class the most amazing results are accomplished by radium for it renders most of the cases operable and produces in nearly all the disappearance of cancer cells in the local lesion. There are in my series seven uteri that were removed following radiation in which the pathological picture upholds the latter statement, for in none was there found any cancer of the cervix. Of seventeen cases that fell into this class in 1918 and were treated with radium alone, five died of cancer and eight are in poor condition. There are four in this group that are in good condition and might have some prospects, although they cannot be said to be free of all clinical evidence of the trouble to date.

Careful review of the history sheets of the return clinics shows that at some time during the period of three months following the treatments a considerable percentage of the thirteen cases that did not do well had a retrogression of the local lesion that seemed to be complete. Future work will have to determine whether or not there is an intervening period between the treatment and the recurrence when very radical removal of the uterus and parametrium (when perhaps the cancer cells are quiescent) will give a better prognosis.

The operable cases are those in which the disease is limited to the body or cervix and to all intents and purposes the disease is a local one. It is possible that the local lesion can be completely eradicated by radium. One of three further procedures may be adopted; the uterus may be left *in situ* and massive radiation conducted through the parametrium. Statistics alone will show if this is a justifiable treatment, but if it is used an extra applicator must be placed in the body of the uterus, for sometimes the extension is along the mucous membrane. A simple hysterectomy may be done, followed by further radiation, or a radical operation may follow the complete or incomplete raying of the pelvis.

In this series, through a period of four years, there were treated twenty-one operable cases; two in 1915, four in 1916, three in 1917, eleven in 1918, and one in 1919. Five of these were operated on after the treatment. Five must be discarded from consideration as regards the cancer, for two discontinued treatment before it was complete, one died from appendicitis a few months after treatment at a time when there was no evidence of the disease, and one died as a result of the operative procedure; one died from cerebral embolus during an attack of rheumatism after the cervix was clear.

Of the sixteen remaining cases, one cervical case died of cancer after operative removal of the uterus, and one fundus case did the same; fourteen cases are alive, seven body and seven cervical, four of the former and three of the latter are in good condition. Of the remainder, four are in poor shape and the remaining three are hopelessly involved. One body and one cervical case have been well for over four years, one cervical for two years, and nine cases have lived more than one year since the treatment.

The operable carcinoma of the body of the uterus is such an indeterminable thing from the standpoint of judging of its extent that treatment with radium alone is seldom justified. The flat cancer extending over most of the mucosa and involving the wall in certain areas can hardly be expected to resolve from the blind insertion of radium into the uterine cavity, especially if the uterus is considerably enlarged. The glandular type of carcinoma reacts more readily to the radium, however, and removal of the organ should be preceded by its application. Several of our cases have been in aged women and following the shrinkage in size of the uterus and the disappearance of bleeding and discharge it has been deemed better judgment to rely upon watchful waiting for further evidence of the disease.

The prophylactic treatment following the removal of the tumor offers a field in which a great deal may be accomplished, provided the operator does not remove most of the vagina, as this cavity gives the only practical entrance for the radium applicators. There were eleven such cases, with one death, and two with a general fibrosis of the pelvis with return of the tumor, and eight cases are free from any clinical evidence of the disease, and seven of these for periods longer than one year.

Early recurrent cancer following hysterectomy treated by massive doses and by cross-fire have resulted, in a number of cases, in complete retrogression and in numerous cases with a prolongation of the patient's life. In 1918 there were twenty-seven of these cases with only eight deaths or final discharge from the records by May 1st of this year. The statistics of all these cases will appear in the tables.

The Percy operation as a preliminary to the radium treatment has not been used since 1916. It, of itself, is not efficacious for the cure of cancer, and the use of radium following the operation is not advisable, for the tendency to fistula formation in the tissue that has been partly desiccated is very great. However, of twenty-nine cases there are four alive and in fair condition.

CANCER OF THE VAGINA AND VULVA.

The flat cancer of the vaginal wall will subside almost as if melted away, and this caused Howard Kelly to say that it is in this type of carcinoma that the most spectacular effect of radiation is shown. I have had one demonstration of this but only to see the cancer return in the rectum. As a rule, the wall of the vagina is deeply involved and the case advances rapidly. There were several cases of vulvar cancer, but with two exceptions they were quite advanced when first seen. One was a secondary recurrence appearing about a year after an apparent cure of cervical tumor by radium. It responded at once to renewed treatment and remained well for over a year. Since writing this paper a recurrence again has appeared in the vulva.

TECHNIC.

As was stated in the first paper, the treatment in the year 1915 was similar to that used in other institutions where the quantity of radium at hand was in the neighborhood of 100 mg. It consisted chiefly in the application of the radium emanation in a lead filter within the cervix for 1000 or 1200 mc. hr., and its reapplication two or three times so that by summation the small amount of gamma rays extending into the parametrium would be sufficient to render nonviable any cancer within several centimeters of the cervical involvement. In addition, many of the cases were further rayed by inserting a lead covered capsule in the vault of the vagina or a lead capsule was inserted into the rectum enclosed in a T-cross-piece of rubber tubing. After insertion into the rectum the arms of the cross-piece were lifted and served to hold the radium stationary. In many ways these methods are effective in reaching the outposts of the disease, but the resulting irritations led to their abandonment. The reapplication of the capsules within the cervix produced a deep radium slough which did not heal in many instances, and in some led to the premature development of fistulæ into the rectum and bladder. The application of the radium in the lead box or capsule, packed into the vault of the vagina, almost invariably caused irritation of the bladder and rectum which was severe and persisted for long periods. The rectal application, placing the radium almost in direct relation to the affected parametrium, I still think well of and I believe that a single application of this type is well borne.

In 1916, to reduce the secondary ray effect, the lead filter was changed to platinum. One millimeter of platinum is equivalent as regards filtration to about 2 mm. of lead and it offers a smaller and neater applicator. It has been the standard cervical filter in our clinic since that time. The more dense the substance through which the rays pass, the harder and more penetrating they become and, therefore, the radium produces a deeper result with less local necrosis. It is probable that it makes little difference which metal is used as a filter, providing the quantity of gamma rays remains the same.

While the intracervical capsule always remains the most standardized part of the technic in treating primary cancer, for it is not only in direct relation with the original ulceration but also lies in approximately the center of the lymphatics and lymph-gland involvement, its method of employment is quite different. The aim in the present technic is to give one massive dose and not to reapply the radium to the same area. To prevent recurrences due to the development of imperfectly radiated cells in the neck or lower part of the body of the uterus, a platinum or silver piece is placed within the body of the organ and an amount not over 1000 or 1500 mc. hr. is given, depending upon which applicator is used.

All other radiation is given by means of two accessory methods, and is directed entirely to the involvement or possible involvement of the parametrium and the glands within the pelvis. Most important is the application of an amount of radium emanation of approximately 1000 mc. strength to the vault of the vagina on each side and to the center.

The apparatus that has been used to hold this large amount of radium and to screen all but a square centimeter in front (which has a filter of 1 mm. of platinum) has been termed a "bomb" because of its almost exact resemblance to the small hand grenades used in the War. It is essentially an iron capsule holding 2 cm. depth of mercury as a filter for the back of a receptacle lined with about 6 mm. of lead, into which the radium is placed. The whole capsule is again filtered, for protection from the secondary rays, by a cover on the sides of 2 mm. of rubber and on the front by thin aluminum.

A more perfect filter, theoretically, was made in which the mercury also filtered the sides of the radium chamber; but from a practical standpoint this applicator was never successfully built and No. 2, the one shown in the drawing, has been used in almost every case suitable for such an application since November, 1916. One great fault in the use of the "bomb" was that its weight caused the pelvic floor to sag and thus drop it out of position.

I am indebted to Dr. Bagg for suggesting and building a frame which may be placed in the patient's bed, which holds her in a fixed position and, at the same time, holds the wire stem of the apparatus so rigidly that no weight falls on the patient. It is also provided with an arc-shaped track through which the applicator may be moved in changing the direction from one side of the vaginal vault to the other (Figs. 2 and 3).

FIG. 1.—Röntgenogram showing shadow of "bomb" directed toward right parametrium. Cervical crater packed with bismuth gauze.

The other accessory method consists in radiation through six skin portals around the pelvis, using a total of 18,000 mc. hr. or 3000 mc. hr. in each place, at 4 cm. distance. It was found and frequently verified that this is all that the skin will stand, or a skin dose. It not infrequently happens that this dosage will cause a blistering of the skin with exfoliation. The theoretical basis for the use of these surface applications rests on the fact that normal cells of the skin are many times more resistant than the cancer cells. Especially is this true of certain types of cancer, as the adenocarcinoma, perhaps much less so of the epidermoid type. It has been estimated that the normal cells are seven or eight times more resistant than

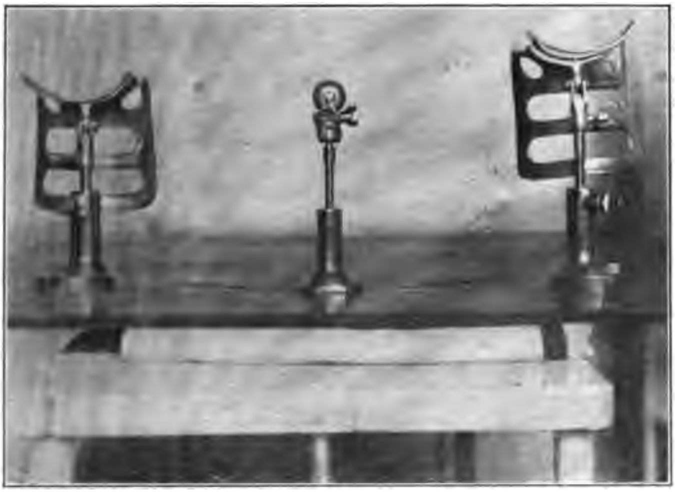

FIG. 2.—Table or frame with leg-holders and standard for holding the "bomb."

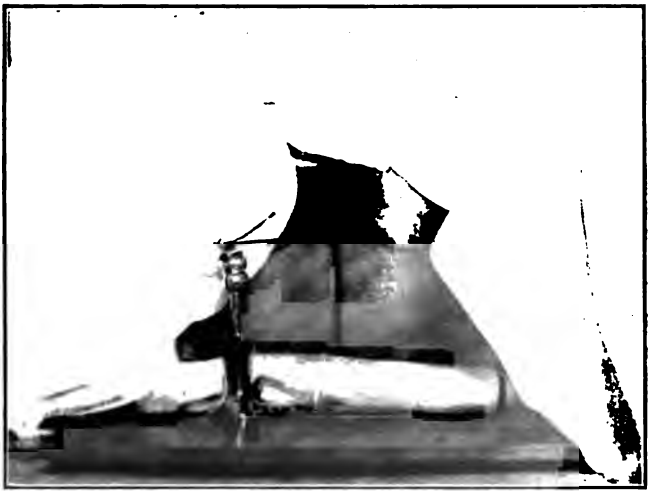

FIG. 3.—Patient on frame or table with "bomb" directed toward left parametrium. Weight of the applicator held by the standard.

some cancer cells, and considerably more than four times as resistant as the squamous type.

If a skin dose is delivered by 3000 mc. hr. at 4 cm. distance and the cancer cells to be affected lie about 12 cm. below the skin, then, provided no allowance is made for the absorption by the tissues, these cells at that distance would receive one-sixteenth of the intensity received by the surface, according to the following equation:

$$I_{16} : I_4 = 4^2 : 16^2$$

$$I_{16} = 4^2 \frac{I_4}{16^2} = \frac{1}{16} I_4. = 0.063 I_4.$$

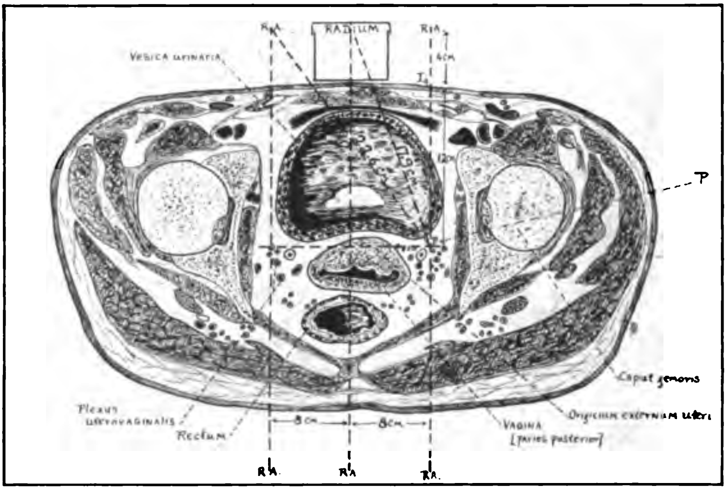

FIG. 4.—Diagrammatic horizontal cross-section of female pelvis, showing small amount of tissue through which the rays pass from surface applications on abdomen and back. Point (*P*) in the parametrium about 12 cm. from either surface.

There is also radiation reaching the point *P* in the parametrium, 16 cm. below the radium from two other surface applicators over the abdomen, which would reinforce this amount of ray intensity. The distance from the symphysis to the sacrum averages 20 cm., allowing 2 cm. on the abdomen and over the sacrum for skin thickness, there would be an equivalent dose to the above, from the sacral applications, so that at the mid-point, 12 cm. from either surface, there would be a summation of radiation from the six surface applicators equal to slightly less than one-third the intensity at the skin surface due to one application (Fig. 4).

I wish to emphasize the fact, that this calculation does not take care of the absorption by the intervening tissues. This probably would reduce the intensity of radiation reaching the point P approximately in the center of the parametrium, to one-third of the above values on a very conservative estimate.

EQUATIONS

$$I_{16} : I_4 = 4^2 : 16^2 \text{ or } I_{16} = \frac{4^2}{16^2} I_4 = 0.063 I_4.$$

$$I_{17.9} = \frac{4^2}{17.9^2} I_4 = 0.050 I_4$$

$$I_{22.6} = \frac{4^2}{22.6^2} I_4 = 0.031 I_4$$

$$I_P = 2(I_{16} + I_{17.9} + I_{22.6}) =$$

$$2I_4\,(0.063 + 0.050 + 0.031) = 0.29 I_4.$$

From a theoretical standpoint, I think that the surface radiation is justified in attempting to destroy cancerous growth in the broad ligaments and in the glands throughout the pelvis.

Under such combined treatment the average case receives in all about 23,000 mc. hr. divided in a manner similar to that shown in the following table:

	Right	Center	Left
Abdominal treatments	3000 mc. hr. at 4 cm	3000	3000
Vaginal and uterine	1000 mc. hr. "bomb" fornix	1000 bomb 2000 in cervix 1000 neck of uterus	1000 bomb fornix
Sacral treatments	3000 mc. hr. at 4 cm.	3000	3000.

A number of cases which had distinct masses in the parametrimu were treated by direct insertion of bare glass tubes containing the emanation. This method only occasionally lends itself to the treatment of uterine cancer. A few cases of extensive cauliflower growth extending into the vagina had steel needles containing emanation tubes inserted into the tumor, and with protection of the vaginal walls as well as possible with gauze.

IRRITATING EFFECTS FOLLOWING THE TREATMENT.

If the radium is at hand, all of the above treatment is given in the course of forty-eight hours. Sometimes the surface treatment is left for the following week. A considerable number of the cases complain of nausea and occasionally of vomiting for a day following the radiation, but this has been considered unimportant and treatment for the condition is seldom necessary. There have been a few cases that had a persistence of the nausea and vomiting for a week. In two of the cases symptoms of gastric or duodenal ulcer were noticed a year or so after the treatment and the diagnosis was verified by the *x*-ray photographs. Neither case has been operated upon but both have been given dietary and medical treatment with greater or less relief. As there were two other cases that were treated by *x*-ray alone and afterward operated for ruptured ulcers of the gastrointestinal tract, it is possible that the development of this condition following radiation is something more than mere coïncidence.

Since the adoption of the present mode of treatment, the main symptoms of irritation have been confined to the rectum. The bladder irritations, so frequent in the earlier part of the work, have been almost entirely lacking. All through the year 1917, in those cases which were treated with the bomb applicator there were none with any serious rectal trouble for long periods after the treatment, although several cases developed fistulæ in 1918 after further radiation. The total dosage toward the parametrium during this period was low, an average of 600 to 800 mc. hr. toward each side and somewhat more toward the center.

At the beginning of 1918, in reviewing the accomplishments of the preceding year, there was dissatisfaction with the results because so many of the cases developed further extensions of the disease after the treatment. It was deemed advisable to gradually increase the dose that was to be directed toward the parametrium. This was done and the average lateral dose rose to the neighborhood of 1200 mc. hr. and the center to 1800 mc. hr. In an effort at further improvement at the end of June and until Feb., 1919, the rubber filter for the secondary rays was changed to rubber dam. The clean rubber dam placed over the apparatus after boiling made the procedure more surgical and also allowed of easier application. At about the same time the emanation was placed in a small glass bulb and with the sides of the holding chamber made deeper by a further insert of lead. These changes in technic were temporary.

Nearly all cases that have palpable parametrial involvement when the treatment is begun, and later seem to become free of the disease, have a bridge of thickened tissue across the pelvis at the level of the lower border of the broad ligaments. In the recurrent cases the thickening is quite definitely in the region of the remains of the uterosacral ligaments, and thus constricts the rectum. Many of the cases that seem to be in good health have this "uterosacral bridge" of tissue. There is some doubt in my mind whether this thickening may not be of the nature of scirrhous carcinoma rather than a fibrosis caused by the radium. There were a few cases which had this condition, and were well for a time, and later died with masses of hard, apparently cancerous growth filling the pelvis. I have kept two such cases in the wards for over a year, in the hope of ascertaining the facts in the event of their succumbing to the disease; but these two patients seem to remain in the same general physical condition.

However, in the early part of 1919 the method and dosage were changed again to those of the early part of 1918, as outlined under the section of this paper entitled "Technic." It seemed that not only was there insufficient protection irom the seconday rays from the surface of the metal of the applicator, but also that the total radiation was excessive.

It is clear that the problems regarding the dosage and methods of application are as yet unsolved, and that where rapid improvement occurs and is the rule directly after the treatment, careful control of the cases reveal recurrences or failure of complete retrogression of the tumor originally present, and many times coupled with deleterious results from the radium action.

DISCUSSION OF EIGHT CASES TREATED BY RADIUM AND OPERATED LATER IN OTHER CLINICS.

It has been the general policy of the Hospital, in cases that have shown such improvement that no clinical evidence of the disease remained, to leave "well enough alone" rather than by operative procedure to remove tissue formerly infiltrated by the cancer. This policy seems to be a logical one, especially from the standpoint of a research institute and final results will substantiate or discredit it. In the meantime, this position is upheld by a similar decision on the part of Dr. John G. Clark. Despite this position, we have eight cases that were referred to us by others for preoperative treatment, and in six of these cases the specimens removed later were placed at our disposal. In one case the results of the pathological examination have been reviewed by us and in one, a uterine body carcinoma, the report is at hand from a pathologist of another city.

Seven of these cases were cervical cancers and the specimens taken to establish the diagnosis and the tissue removed later were examined by Dr. Ewing (in one case the slides only were seen by him) and in only two cases were there evidences of cancer in the removed uterus or parametrium. In one there were a few broken down tumor cells well out in the parametrium that had the appearance of being nonviable, and in the other the operator cut through cancer tissue. None of the seven cases had any cancer left in the cervix. This fact together with clinical observations in many other cases led to the remark made earlier in this paper, that usually there is no difficulty in causing an apparently complete disappearance of the tumor tissue of the local lesion even when it is of considerable depth. But when the further history of these seven cases comes into the record, it will be found that notwithstanding radiation and operation, they are all dead but three, two of which have cancer in their pelves together with fistulæ and the third has only recently been operated.

CASE I.—The specimen showed an epidermoid carcinoma, and clinically the disease was confined entirely to the cervix. This patient received a dose of 2200 mc. hr. in platinum within the cervix on April 22, 1916, and one week later 1400 mc. hr. in a lead filter against the cervix, with the vaginal walls held away by packing. Three weeks after the first application, she was operated upon and considerable inflammatory reaction was found in the pelvis. A simple hysterectomy was performed, the patient dying on the fourth day following. The removed uterus showed no cancer cells.

CASE II.—Hospital No. 23076. The specimen showed an epidermoid carcinoma. Clinical examination disclosed that not only the cervix but the parametrium was involved. Several applications were made within the cervix during March, 1916 with the total dose of 9280 mc. hr. Operation followed about a month later. The left parametrium was found involved, but the specimen showed no cancer cells in the uterus. A fistula into the bladder followed the operation and the disease progressed rapidly, death occurring in Dec., 1916.

CASE III.—Hospital No. 23194. The specimen showed an epidermoid carcinoma. The disease was apparently limited to the cervix. On May 11, 1916, she received 1800 mc. hr. in platinum within the cervix and again 1600 on May 18th. On May 11th 2000 mc. hr. was given in a lead bomb, directed toward the cervix. About a month later a radical hysterectomy was performed by the same surgeon that had Case II. Dr. Ewing found no cancer cells in the specimen removed. The patient improved and for months seemed free of the disease. She developed a bridge of induration in the region of the uterosacral ligaments, constricting the rectum. She had two further treatments in Jan. and Feb., 1917, but died of cancer early in 1917.

CASE IV.—Hospital No. 23160. The specimen showed adenocarcinoma of the body of the uterus. Her general condition was such that it was thought best to treat her with radium, at least as a preliminary measure. She had 1800 mc. hr. May 4, 1916; 1700 mc. hr. May 8th and 900 mc. hr. July 6th, all in platinum applicators and as far as possible in different areas of the uterus. She improved for a time and on Oct. 21st seemed quite free from symptoms. A short time later the discharge returned and her uterus was removed eleven months after the first radium treatment. The pathologist found adenocarcinoma in the uterine wall beneath a sloughed surface. She died of recurrence in April, 1918.

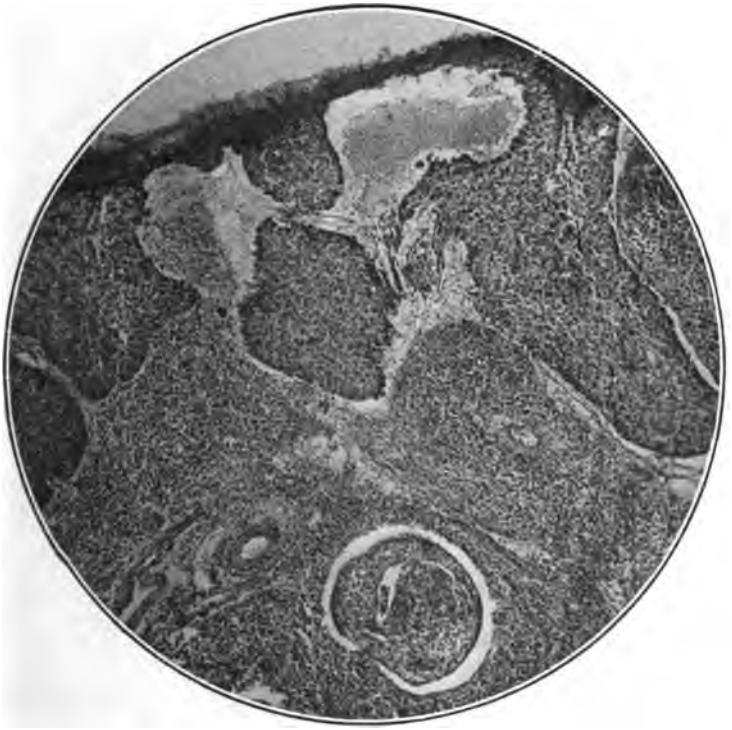

FIG. 5.—No. 25186—1. Specimen taken for diagnosis. Infiltrating epidermoid carcinoma of cervix.

CASE V.—Hospital No. 25186. The specimen showed infiltrating, plexiform, epidermoid carcinoma. Clinical examination revealed a collar-like mass about the cervix with a crater 3 cm. deep. The ulceration extended onto the vaginal wall, and the parametrium was infiltrated. On Feb. 7, 1918, a platinum piece was placed within the cervix for 1500 mc. hr. and the following day the bomb was applied to the center for 1880 mc. hr., and to the sides of the vaginal vault for 940 mc. hr. each. On the second day of the treatment the surface applications were made over the sacrum and abdomen for a total of 17,500 mc. hr. A Wertheim operation was performed on April 11, 1918, and the specimen was sent to us. There was no evidence of cancer either in the uterus or in the parametrium. A week following the operation a fistula developed into the bladder. I examined this patient April 1, 1919, and although her general health is good, she has both rectal and vesical fistulæ, and the entire lower part of her pelvis is indurated and apparently infiltrated with cancer (Figs. 5 and 6).

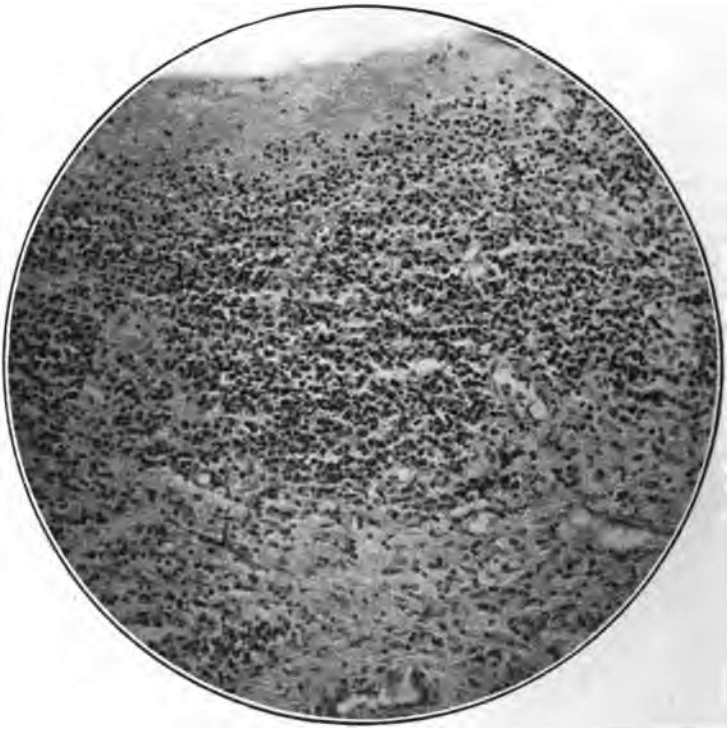

FIG. 6.—No. 25186—2. Wertheim one month after radium treatment. Section of removed uterus at the region of the cervix. Slough on the surface. Infiltration by plasma cells and lymphocytes.

Examination of the entire specimen failed to show cancer cells either in the uterus or parametrium.

CASE VI.—Hospital No. 25262. The specimen showed a papillary adenocarcinoma. The tumor involved the cervical canal to the os and about the opening, but the cervix near the vaginal walls was not ulcerated. The right parametrium was thickened. On March 7, 1918, a platinum piece was placed high in the neck of the uterus for 1605 mc. hr. On the 8th of the month three bomb applications were made—1546 mc. hr. to the center and 773 mc. hr. to each side. Surface applications over five areas totalled 14,912 mc. hr. A Wertheim was performed on April 22d by the same operator that had Case

V. The specimen was sent to us and no tumor cells were found. The patient died of cancer Jan. 22, 1919 (Figs. 7, 8, 9 and 10).

CASE VII.—Hospital No. 25309. The specimen showed epidermoid carcinoma. This was a very early case. The cervix alone was involved, but only around the os. On March 21, 1918, a platinum piece was placed in the neck of the uterus for 720 mc. hr., and the following day an application of 900 mc. hr. was made lower in the cervix. On March 23d the bomb was directed toward the center for 2133 mc. hr. and toward the sides of the vaginal vault for 711 mc. hr. each. Surface application was made over six areas at a distance of 4 cm., and the total dose given in this manner was 18,426 mc. hr. A Wertheim operation was performed April 22d by the same surgeon that had charge of Cases V and VI. The specimen was sent to us and Dr. Ewing found a few tumor cells that seemed to be in the last stages of disintegration. A bladder opening at the time of the operation was repaired but later broke down. April, 1919, the patient refused to be examined, saying that she had adopted Christian Science. She was up and about, but had a fistula and was in a very miserable condition (Figs. 11, 12, 13 and 14).

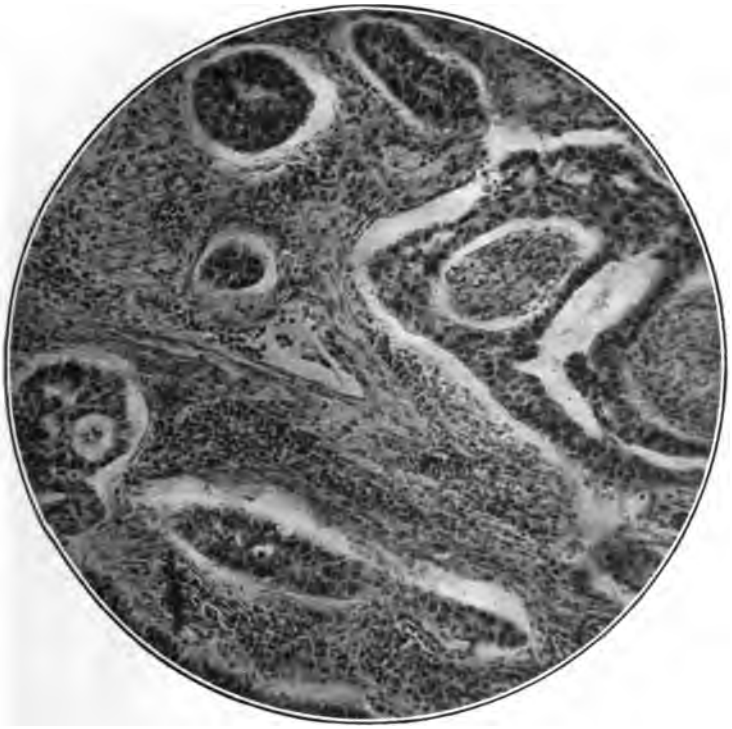

FIG. 7.—No. 25262—1. Specimen for diagnosis. Papillary adenocarcinoma of the cervix.

CASE VIII.—Hospital No. 26196. The specimen showed epidermoid carcinoma. The entire cervix was involved, but the parametrium did not seem to be infiltrated. On Jan. 27 and 28, 1919, the patient had the regular platinum piece and bomb treatment, but she had no surface applications. The details, including the microphotographs, will undoubtedly be given by the operator in the report of his own Wertheim cases. The specimen removed by a Wertheim about a month later, including the sections from two enlarged glands in the parametrium, was viewed by Dr. Ewing and no trace of cancer was found. One of the glands had several dark staining conglomerate masses that seemed to be calcified cells, but there was no evidence of their original origin.

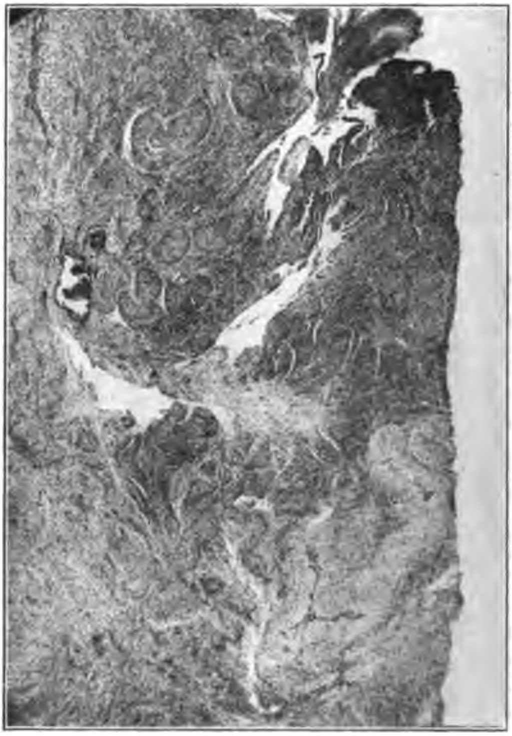

FIG. 8.—No. 25262—2. Wertheim one month after radium treatment. Section of removed uterus at the region of the cervix. (*A*) Slough on the surface. (*B*) Infiltration of leukocytes and plasma cells. (*C*) Marked endarteritis—swirls of new fibrous tissue about the vessels, occluding many.

In these four Wertheim cases the dissection of the bladder from the cervix was difficult, as it was densely adherent but otherwise there were no signs of inflammation in the pelvis. Two cases, Nos. 1 and 2, treated by the earlier technic, where the lead capsule was protected by a small metal box and was packed in the vault of the vagina, were reported to have marked signs of inflammation in the pelvis.

RESULTS WITH THE FOLLOW-UP ON CASES REPORTED IN THE FORMER PAPER.

In Table 2 of the former paper the results in 100 cases treated during 1915 and 1916, are compared as regards their condition and their treatment previous to the use of radium. There were at that time eighty-one dead, six greatly improved, and thirteen apparently free from cancer. Two years later, May 1, 1919, in this same list of 100 cases there are eighty-six dead, three greatly improved and eleven apparently free from cancer. In examining the results in another way it will be found that of fifty cases treated in 1915, there are now forty-five cases dead and 5 or 10 per cent. apparently free from cancer.

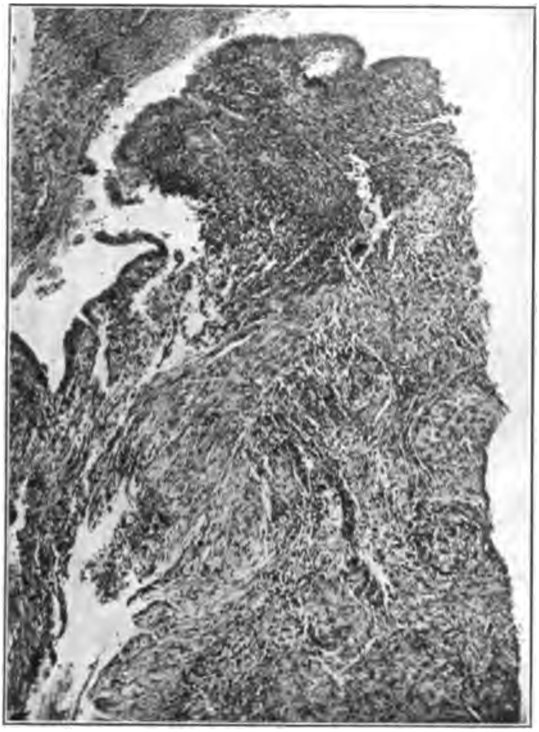

FIG. 9.—No. 25262—3. Higher power—same section as No. 25262—2.

In 1916 there were also fifty cases, and now there are forty-one cases dead, three greatly improved, and six or 12 per cent. apparently free from cancer.

In regard to the five cases of 1915, that now seem to be well, it is necessary to give a few words of description. Two of the cases were primary, one an adenocarcinoma of the body, and the other a very early case of carcinoma of the cervix in a woman seventy-two years old. The specimen in the latter case was examined by Dr. Ewing, but the clinical examination revealed no evidence of the disease, aside from a raw area from where the specimen was excised. Two cases, previous to the radium treatment, had operations of the Percy type. One was treated at once after the burning, and the other was treated only after a discharge had again appeared and a thickening had occurred in the left broad ligament. In this latter case no specimen could be obtained, but it seemed without doubt

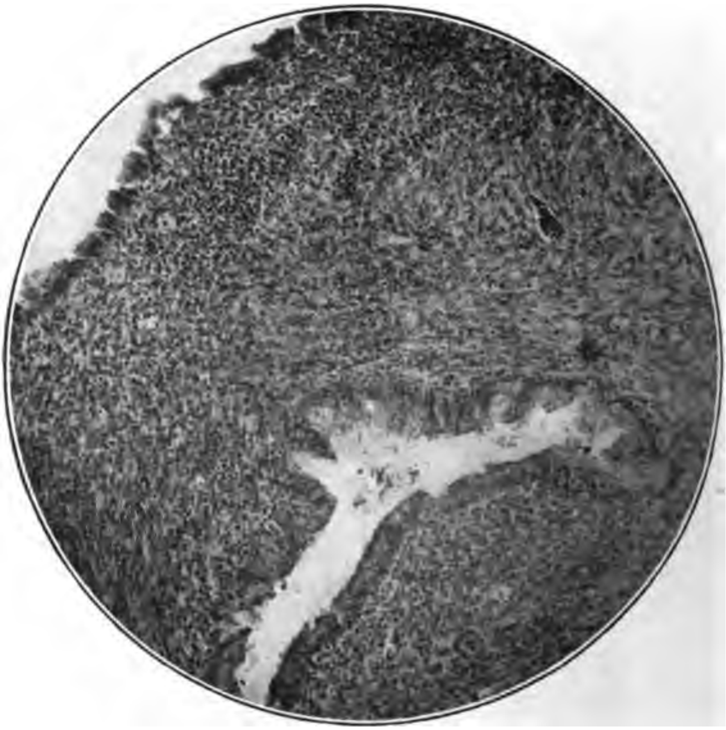

FIG. 10.—No. 25262—4. Section higher in the uterus showing infiltration of lymphocytes and plasma cells. Partially degenerated epithelium of surface and gland.

that the symptoms were caused by further extension of the disease. The fifth case was a recurrence of an adenocarcinoma of the body of the uterus. Here again no specimen was obtained, but there was ulceration in the vault of the vagina with discharge.

Of the 1916 cases, the nine that are still alive were of the following nature: five were primary, two were recurrent, and two were Percy cases.

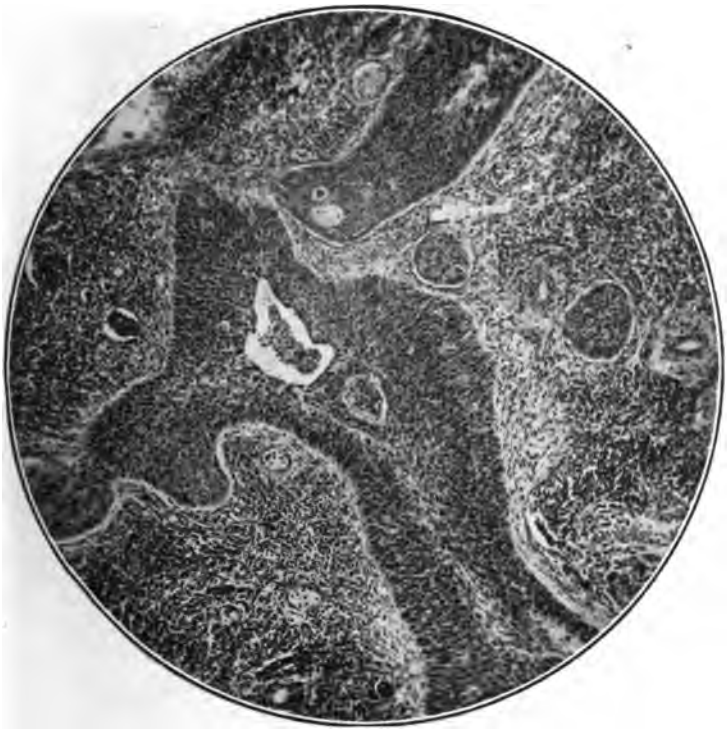

FIG. 11.—No. 25309—1. Specimen for diagnosis. Epidermoid carcinoma of the cervix.

In 1917 there were eighty-four cases, but two were treated for prophylaxis against return following a hysterectomy, and six discontinued treatment. Of the seventy-six cases remaining, thirteen or 17 per cent. are living; seven or 9.2 per cent. are in good condition, and six are in poor shape. A number of the cases that are doing well have a bridge of fibrosis in the region of the utero-sacral ligaments.

In 1918, there were 137 cases treated for carcinoma, but six discontinued treatment, ten had cancer of the vagina or ovary, and nine were prophylaxis cases; leaving 112 of carcinoma of the uterus, primary or recurrent. Of these forty-six are dead or in the last stages, and sixty-six or 58.3 per cent. are still living. Nine recurrent and eighteen primary cases, though living, are in poor shape; seventeen recurrent and eighteen primary or 31 per cent. are in fair condition, but many of them still have some evidences of the tumor. Of course, no comparison should be made with the cases of the former years, because of the short period that has elapsed since treatment. Of the eight prophylaxis cases treated in 1918, one is dead, two are in advanced stages of the disease, and six are apparently free from the growth.

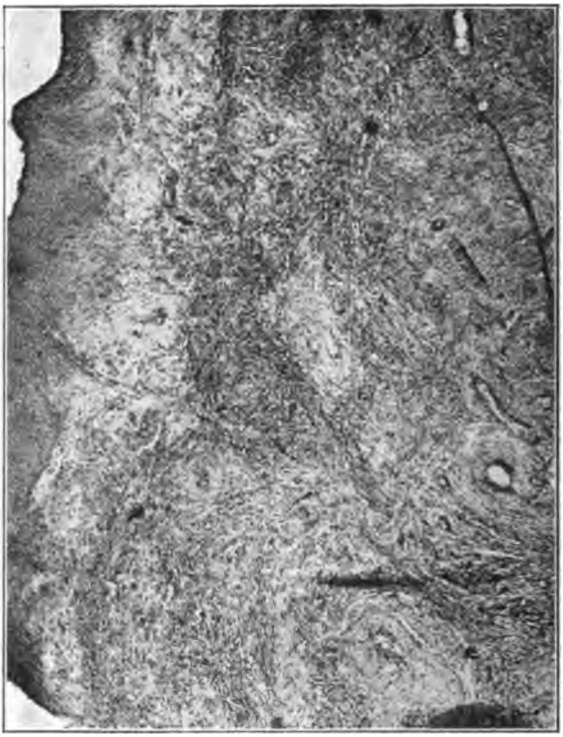

FIG. 12.—No. 25309—2. Wertheim one month after the radium treatment. Section of the removed uterus at the level of the cervix. Infiltration of lymphocytes and plasma cells. Lightly stained new fibrous tissue. Endarteritis of the smaller vessels.

From January to May, 1919, there were thirty-four new cases treated; sixteen were primary, fourteen were recurrent, and one was for prophylaxis. There were two vaginal cancers. (See Table I.)

CONCLUSIONS.

Practically all of the cases that have a complete radiation of the local lesion, and the lymphatic and other involved tissue in the parametrium, pass through a period of improvement. In all but the more advanced conditions this improvement consists of a disappearance of the ulceration, a lessening or entire disappearance of the discharge, a gain in weight, and general improvement of their health. Undoubtedly their lives are lengthened. A number have some slight degree of rectal irritation, beginning a week or ten days after the treatment, and lasting two or three weeks. A few have a fibrosis of the pelvic connective tissue, especially at the bases of the broad and uterosacral ligaments. Where this bridge

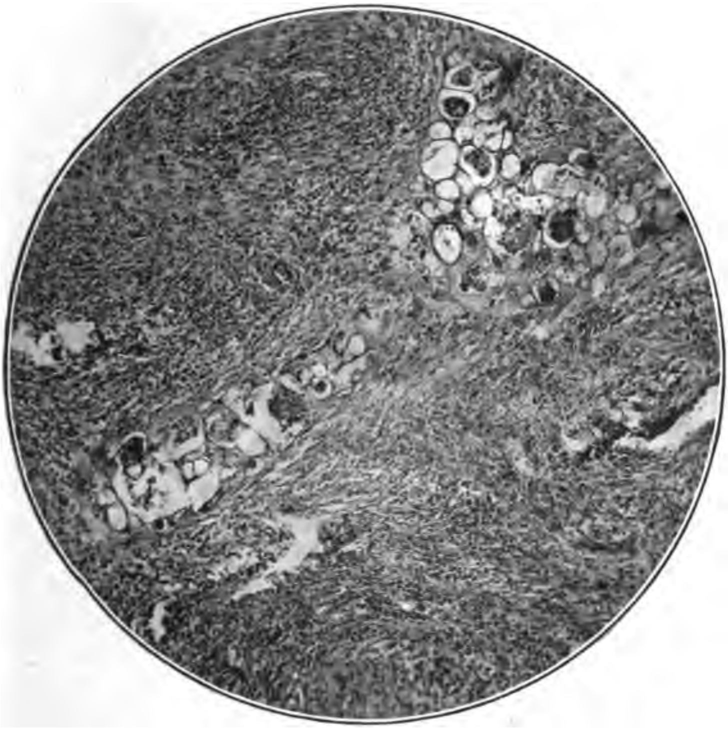

FIG. 13.—No. 25309—3. Cancer cells in the parametrium undergoing hydropic degeneration and disintegration.

of tissue constricts the rectum to any marked degree a fistula will form above and communicate with the vault of the vagina. As mentioned by Burnam, when this does occur all pain is relieved and the patient gains at once and, in my opinion, does not have nearly as unhappy and as miserable a life as might be expected.

After a longer or shorter time of well being following the treatment,

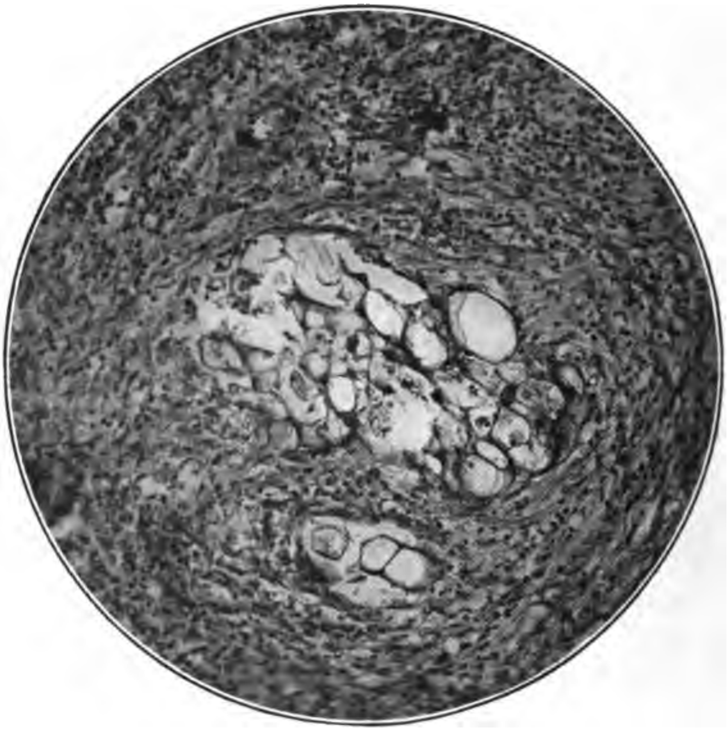

FIG. 14.—No. 25309—4. Higher power of No. 25309—3. Shows disintegrated cancer cells in connective tissue infiltrated with plasma cells.

TABLE I.

	1915	1916	1917	1918	To May 1 1919	Living		
						Poor	Fair	Good
Advanced, Primary	15	24 (2)	41 (2)	41 (19)	14 (14)	15	7	15
Advanced, Recurrent	15	6 (2)	15 (3)	19 (10)	10 (10)	8	10	7
Border-line	0	3 (2)	3 (2)	17 (12)	1 (1)	8	1	8
Early Recurrent	3 (1)	2 (1)	11 (3)	16 (12)	5 (5)	3	8	11
Percy	15 (2)	11 (2)	3	0	0		2	2
Operable	2 (2)	4	3 (2)	11 (9)	1 (1)	4	4	6
Prophylaxis	0	0	2 (1)	8 (7)	1 (1)	2		7

Figures within the parentheses represent the number of cases alive May 1, 1919.

many of the cases have further development of cancerous tissue behind the vault of the vagina. In the effort to save these patients that have a retrogression after six or eight months, I have pushed the radium treatment of the parametrium, both by vaginal and by surface radiation to the highest limits of safety, and have thereby caused in many who now appear to be free from cancer, various types of pelvic sclerosis, both mild and severe. I have felt that it was wise to recede somewhat from the massive dose given by the bomb applicator. This dose now is actually in the neighborhood of three-fourths of the maximum; the dosage in 1917 being about one-half the maximum.

The method in use permits of the entire treatment being given in a forty-eight hour period, and with only moderate discomfort to the patient. The local slough and signs of irritation in the vault of the vagina, seen so frequently in using the older method is now lacking in most of the cases.

The most spectacular results in the entire series were those of the four Wertheim operations, which followed a month after the radiation. In three of these, no cancer cells were found in the uteri or parametrial tissue that was removed; and in the fourth case only a few markedly hydropic and degenerated cancer cells were present in the parametrium. It must be admitted that in these cases, at least, the radium caused the tumor cells to disappear even more thoroughly than ablation could have removed them. If such results could be looked forward to with any degree of regularity, then the very reason for the operation would cease to exist. It should be a very simple problem to settle, for all time, the relative merits of these procedures. Twenty-five consecutive cases, well controlled, would show how dependable are the results of this type of radiation. Without the removal of the uteri of some such number with a plan carefully followed, there will always be uncertainty, for even in the cases of this series, where there was every reason to believe that the patient would be restored to health, after a year we find that one is dead, and two have massive involvement of their pelves that is apparently cancerous. The question at issue is not the cure, but whether radiation will cause the permanent disappearance of cancer cells, from a region as wide in its limits as that area that would be removed by the most complete hysterectomy of the Wertheim type.

From our results in the uterine body cancers, it would appear to be necessary to remove the uterus after a preliminary radiation, or where this is inadvisable to radiate the entire pelvis as completely as is done with a cervical tumor.

The results in the recurrent cancer following a hysterectomy are very promising. It should be understood that it is as important to radiate these cases immediately after operation, as it is to operate early in the course of the disease. Taking only the years up to 1918, there are 26 per cent. of the recurrent cancer cases still living; 59 per cent. of this type of the year 1918 are still living. Of course, this number will drop tremendously during the next year; and it only illustrates the point mentioned above, that so many of the cases have a temporary improvement and retrogression. Over 60 per cent. of the cases treated as a prophylaxis, against the return of the tumor following a hysterectomy, are still free of the disease, but as most of these were treated in 1918, a year or two more must pass before any conclusions may be drawn.

So great has been the palliation from the radium that it may be said, that no uterine cancer case receives proper treatment without thorough radiation of the tissues of the pelvis.

My associate, Dr. H. C. Williamson, has rendered invaluable aid in the care of these patients.

I wish to express my thanks to Dr. Halsey Bagg for suggesting and building the first form used for holding the mercury applicator, and also for his pen and ink drawing of the cross-section of the pelvis. Mr. G. Faille furnished me with the calculations for the surface applications.

269 Lexington Avenue.

THE TREATMENT OF PAPILLARY TUMORS OF THE BLADDER IN WOMEN.*

BY

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My concern is to determine how best to approach and to deal with vesical papillomata and infiltrating cancers of the bladder wall not yet extensive. Before the days of cystoscopy a certain diagnosis of papilloma or cancer could not be made in the early stages and there was no such recourse as any real surgery of the bladder, beyond a mere incision and drainage for cystitis. Then came the era of free suprapubic openings of the bladder, followed by more or less extensive extirpations, with their too frequent recurrences, and now at last with our greater experience and greater familiarity with the diseases of the bladder and better methods of diagnosis, I think it is time to inaugurate also other yet better methods of treatment, and to hark back in some cases at least to more conservative procedures.

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*Read at the Forty-fourth annual meeting of the American Gynecological Society, Atlantic City, June 14–17, 1919.

Imprimis, the best way to recognize a papilloma or other early neoplasm is to look at it with the patient in the knee-chest posture, that is to say, through the air-dilated emptied bladder, using a cystoscope from 6 to 12 mm. in diameter. It is possible to look straight at the growth as it hangs like a bunch of grapes or a cherry from the base, or sits like a raspberry on the lateral or posterior walls of the bladder, or surrounds the internal urethral orifice like a ruche, or again is widely disseminated. This is in every way better than interposing a watery medium and peering through lenses or glass when the view is often obscured by the murky fluid and the examiner is harrassed by the manifest discomforts of the patient. Air distention is also a better method as it has a greater range of service, in that it permits the examiner to measure accurately distances in the bladder and, with the end of the speculum as a unit, to calculate accurately the length and breadth of the tumor and the size of its pedicle and to come into direct contact with it. The cystoscopist also, as Herschel swept the heavens, rapidly sweeps with his glance all the concave surfaces of the bladder, especially including the circumurethral area, and notes the presence of other tumors or young sprouts, as well as the larger one, and locates them with precision. Such a careful examination as is possible through an open-air cystoscope makes for a more thorough scientific handling of the case in the eradication of disease, and greatly enhances the interest of the work.

The above method of examination is comparable to that used in investigating and treating the pharynx, having this advantage that there are no reflex sensibilities of the bladder to interfere, no gagging and no delays. It is an advantage that the patient is completely in the dark as to instrumentation, assistants and all manipulations.

The chief difficulties in the way of the universal adoption of this method lie merely in inexperience, in the lack of a sufficient number of honest efforts. .Let me enumerate several of the major trials beginners experience.

The first difficulty is with the posture of the patient which should be an ideal relaxed knee-chest position—thighs vertical or a little drawn under the body, head turned sidewise with cheek on table and elbows well out at sides. It helps in the occasional hard case where the bladder does not expand well, to have the bowels completely emptied, and to avoid examining soon after a full meal which takes up room in the stomach. These adjuvants are oftenest called for in the very stout. Frequently when I insert the cystoscope and look into the bladder and see a poor expansion, without investigating the posture at all, I simply declare, "The patient is not in position." The nurse then goes to her head, takes away a pillow, tells her to relax, pushes in the back and takes the elbows off the table and turns the face to one side, then the organ balloons out for inspection. A little patience always rights the matter. In a nullipara you may get too much vesical expansion and not see the base well; but letting air into the vagina drops the base to the plane of vision.

Secondly, trouble is experienced owing to unfamiliarity with the use of the head mirror and a reflected light. Such knowledge is so generally essential to a physician that this difficulty must be overcome, or he is unfitted also to look at throats or at the vagina in the knee-chest posture. This objection is childish and I pass it by.

The use of the speculum ought not to present any difficulty at all. Cocainize the urethra well with a 10 or 20% solution of novocaine on a wee pledget of cotton attached to a thread and pushed just inside, and in 10 minutes examine. Take a number 10 speculum (10 mm. in diameter) with a bullet pointed, not too flat, nose and dilate the external urethral orifice with it, as it sweeps in a curved direction over the symphysis, and down in the direction of the superior strait. A conical dilator is sometimes of use to stretch the external urethral orifice, and a skilled examiner can readily use a No. 8 speculum or one even smaller.

Now as to the treatment of a papilloma. The first question is, "Is it malignant?" We can have a malignant pedunculate papilloma which is clinically benign, *i.e.*, under treatment it goes away and never returns. The general sign of clinical plus pathological malignancy lies in the adjacent infiltration and induration of the bladder wall. This can be felt on the vaginal side, or bimanually if it is extensive, or through the cystoscope by manipulating it with a sound. Any papilloma with a congested, ulcerated, bleeding base belongs in this group.

Surgically, as a rule, it seems of little use to touch advanced malignant growths, the most that can be done sometimes is to open and drain the bladder to relieve tenesmus. We have however seen a few of these very advanced cases improve markedly under radium in large doses applied both within the bladder and through the vagina and occasionally a case some months under treatment has improved remarkably, but as a rule the *exitus lethalis* seems certain. I, therefore, omit these from further consideration, faintly hoping at some future date to offer a more cheering report. A success is occasionally scored if the disease limited to the mobile part of the bladder, constitutes an isolated well-defined patch.

TECHNIC OF TREATMENTS.

The several kinds of treatments available are: (1) Opening the bladder and excising the growths; (2) fulguration; (3) radiation. Opening the bladder and excising the growth is only permissible after other methods have failed, where for example radium does not remove a localized growth, or where hemorrhage is threatening and is not controlled by fulguration. An ulcer may be found to lie at the bottom of such a case rather than a tumor. In extensive, squamous-cell cancer, infiltrating or fixed, or running out laterally, there is nothing to do but radiate, and we have seen improvement under such applications but no cures.

Our experience with sarcoma of the bladder is limited, but we have had a case of rhabdo-myxosarcoma which showed no diminution at all after having received sufficient radiation to have destroyed a cancer of the cervix.

We believe that in bladder tumors the gross and clinical appearance is of more importance in the prognosis than the microscopic report. The one point of the utmost significance is the absence of any tendency to infiltrate the base, and of any hardening palpable through the vagina.

The radium treatments should be applied through the bladder and under direct inspection and not through the vagina. The application is best made in the form of emanation which can readily be introduced in large quantity condensed in a small area, and so placed on the end of a small sound. With systematic applications in mind and with a view to their control, it seems essential to us to make a thorough survey of the entire interior and to plot out the distribution of the lesions found, on a chart. If there are many disseminated lesions, they can then be treated systematically, say for example by fulgurating certain of the more prominent ones in detached areas, in order to effect as rapid a diminution as possible. This is all the more necessary when radium is used, as the immediate results of the treatments are not apparent, and such a plan secures the proper distribution of the applications, and obviates overtreatment.

I would suggest that for such a purpose the bladder is conveniently considered as divided into certain hemispheres, areas and zones. First of all there are the natural divisions, the base, the vertex, the right and left lateral walls, the posterior wall and the anterior wall. The anterior wall is best divided up into the retrosymphyseal area and the periurethral area. The base is further most conveniently subdivided into the trigonal area, the area back of the trigonum and the periureteral areas. An important landmark also are two little pockets or more attached areas on each side which forms the boundary between the base, the posterior and the lateral walls, which I have been in the habit of calling the cornua of the bladder. One of the most valuable distinctions lies in the always easy division between the right and left sides. In mapping out a lesion, it is invaluable to be able to say whether it is entirely limited to the right or to the left side, or just how far it encroaches on either right or left side. The end of the speculum which is usually 10 mm. in diameter, is the measure easily applied to any growth. It does not take an artist to sketch out and plot the location of the various lesions found. If this is repeated from time to time, one then has substantial evidence of progress or the reverse.

The technic of the radium treatments is as follows. For small growths I would apply the radium in emanation on the end of a probe under direct inspection, with the patient in knee-breast posture, and at a little distance, to the amount of 250 mc. hours per month over each 2 × 2 cm. area. It is well, we believe, to divide this into weekly treatments. If there is a fungating ulcerated area the application may be made more direct.

Let me cite a series of cases treated in this way:

CASE I.—Mrs. I. P. L., aged forty-nine years, was admitted into the hospital April 18, 1918. She complained of bleeding from the bladder or uterus and stated that she had first noticed this one year before after the removal of a uterine polyp by a doctor in Buffalo. The bleeding had occurred several times since then. Examination showed urethritis and the patient was treated for this and sent home.

In September the hemorrhages returned and the patient came back for further treatment. This time examination of the bladder, on September 7th, showed a papilloma on the left lateral wall measuring 3 cm. in diameter and 2 cm. high. Microscopic examination of tissue September 9th showed "carcinomatous papilloma of bladder."

The treatments were by fulguration and radium. September 9th, fulguration was done and 619 mc. radium were applied direct in bladder for fifteen minutes. September 11th, 1292 mc. radium on sound were applied in bladder fifteen minutes. October 4th, fulguration.

On November 6, the patient was examined and the following note made: "No more trouble in bladder. Ulcer healing; hemorrhagic area surrounding ulcer." On January 8, 1919, another examination was made and it was found that there was absolutely no trouble in the bladder except a slight redness.

CASE II.—Mrs. O. B. G., aged seventy-five, came to the Hospital March 24, 1915, because of hemorrhages from the bladder. These had begun in October, 1914. On examination a definite papilloma was found just below the right ureteral orifice. Microscopic examination showed "Papilloma of the bladder."

Treatments were both by fulguration and with radium. On March 24th and June 3d, fulguration and on the latter date 564 mg. of radium in a rubber cot were applied for two hours. During 1916, four fulgurations were given in January, March, June and November. During 1917, the bladder was fulgurated in March, October and November and a series of radium treatments was given every two or three days from October 27th to November 26th, thirteen treatments in all consisting of about 500 mc. applied direct to the bladder for about five minutes.

After this series of treatments the patient went home in excellent condition, remaining well for four months. She returned March 25, 1918, with some slight recurrences. These were fulgurated and treatments given in April, June, November and December, 6 in all. In general these treatments were heavier than the first series, 1000 mc. being applied from ten to fifteen minutes in three instances.

The last note on this case which was made on December 12, the date of the last treatment, states that the patient's bladder looked almost well. The entire bladder was normal except for some slight evidence of trouble around the urethra.

CASE III.—Mrs. W. H. S. was admitted to the hospital July 3, 1918. She had suffered three attacks of severe hemorrhage from the bladder but had no other symptoms. On examination there was found immediately behind the pubis a flattened reddish area behind the ureteral orifice. Microscopic examination of tissue showed "Papilloma of the bladder."

Treatments were given as follows: July 10, 1008 mc. radium in cot to bladder five minutes; July 24th, 938 mc. radium direct to bladder for five minutes; September 28th, 752 mc. radium direct to bladder five minutes.

In August and September the patient was examined and no evidence of trouble found. Report from the patient's physician March 14, 1919, is as follows. "The bladder still shows a reddened and scarred area 3 or 4 cm. in extent but there is no suggestion of growth. . . . . Careful vaginal palpation failed to reveal any thickening."

CASE IV.—Mrs. C. M. D., a woman fifty-nine years of age, came to the hospital January 18, 1919, complaining of hematuria. About three months before admission she had noticed bright red blood in the urine. Otherwise she had been perfectly well.

Notes on examination on admission are in part as follows: "Examination shows at base of bladder beginning at internal orifice of ureter a dark colored bossed growth—especially near right ureteral orifice—about cherry size, it measures 2.5 cm. ant.-post., about 3 cm. from side to side. Constant bleeding makes view difficult. Operative treatment in cases of this kind is invariably unsuccessful being followed by speedy recurrence with big fistula." Microscopic examination of tissue did not show malignancy but clinically malignancy was evident (metastasis and infiltration of septum).

Nine radium treatments were given between January 21 and May 1. Of these seven were direct treatments given in the bladder and two were treatments of about 1000 mc. given from the vagina, this being protected by a lead filter, for thirty and forty minutes.

The patient improved under these treatments until when last seen June 13, 1919, the bladder was practically normal except for a small area of granulation 5 mm. in diameter.

CONCLUSIONS.

1. Direct vision and direct accessibility through the air-distended bladder is the simplest, speediest and most effective way of reaching intravesical lesions.
2. Fulguration is the most rapid way of destroying pedunculate and limited isolated lesions and is often permanently effective.
3. Fulguration often utterly fails in disseminated lesions.
4. Fulguration always fails in cases of infiltrating lesions and usually aggravates them.
5. Radium is available and successful in all classes of cases and is especially of value in the group where fulguration fails.
6. Radium should be applied directly under inspection to lesions in substantial dosage, say 250 mc. hours per month to an area 2 × 2 cm.
7. It is better to apply radium in broken dosage, say weekly, following and controlling results.
8. Radium is best applied intravesically when it reaches the part in concentrated form without the risk of hurting the vagina incurred when the treatment is given through the vaginal wall.
9. With the means now at our disposal of using these newer and most effective agencies in the treatment of vesical tumors by the direct open channels of the dilated urethra and air-dilated bladder, the treatment of vesical neoplasms enters upon a new phase of greater hopefulness and our effectiveness as urologists is greatly enhanced in dealing with these fairly common, distressing and formerly often fatal maladies.

10. Extreme watchfulness is necessary at three stages in all vesical neoplasms:

A. It is of the utmost importance to get the case under examination and treatment at the earliest possible moment. This can only be done by investigating at once and tracing to its source the slightest urinary hemorrhage.

B. When under treatment the case must be watched over a period of several months or longer until all trace of the disease has disappeared.

C. All these cases require watching at intervals of at first a few weeks' and then of months' for several years in order to catch any recurrence in an early stage.

1418 EUTAW PLACE.

SPECIAL ARTICLE.

PRENATAL CARE PROPAGANDA.

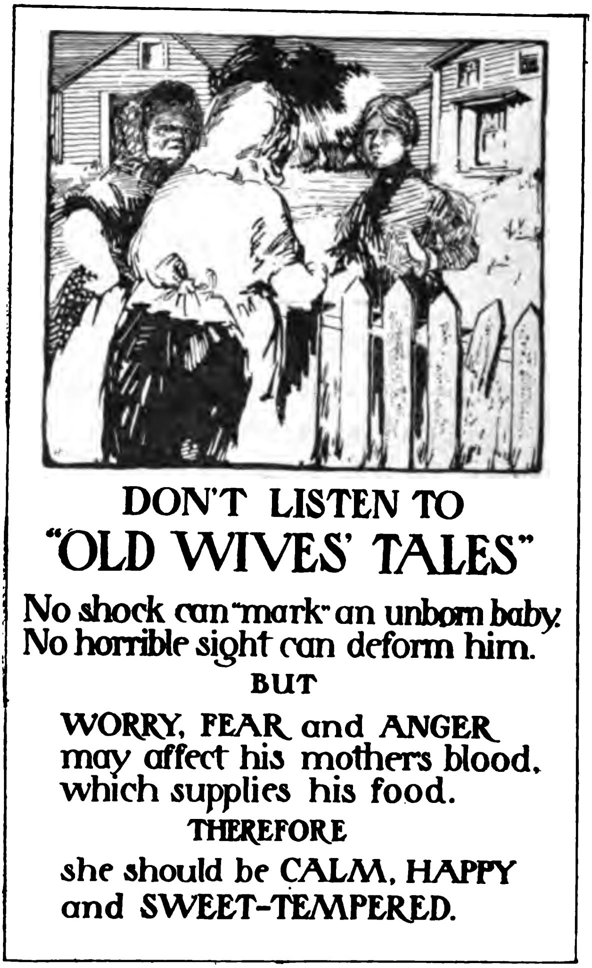
BY
J. H. LARSON,
Secretary, New York Milk Committee,
New York, New York.

(With three illustrations.)

> "Infant mortality is the most sensitive index we possess of social welfare. If babies were well born and well cared for, their mortality would be negligible."
> NEWSHOLME.

FOR the propagating of most anything, whether it be prenatal care, a gold mine, or the latest mode in laxatives, several elementals are essential among which might be mentioned lucidity, conciseness, but, above everything else, terse truths painted in compelling, colorful words, which in the parlance of the professional publicity promoter can be summed up in the one word "punch." Endow each word with a wallop, each phrase with a punch, each sentence with force and simplicity and you have the creed of the successful propagator.

Different subjects, of course, require different means and methods. That which is legitimate needs no more than to have its merits pictured attractively and so impressively as to leave a lasting imprint on the mind to get it "across," which is an expressive bit of theatre argot meaning getting something over the footlights and into the favor of an audience. That which is spurious or bogus is very often put across successfully save that lies, rather than truths, are used. But in this there is no permanent reward and the propagator of frauds must be ever brushing his wits to keep in the van of the public's credulity.



DON'T LISTEN TO
"OLD WIVES' TALES"

No shock can "mark" an unborn baby.
No horrible sight can deform him.

BUT

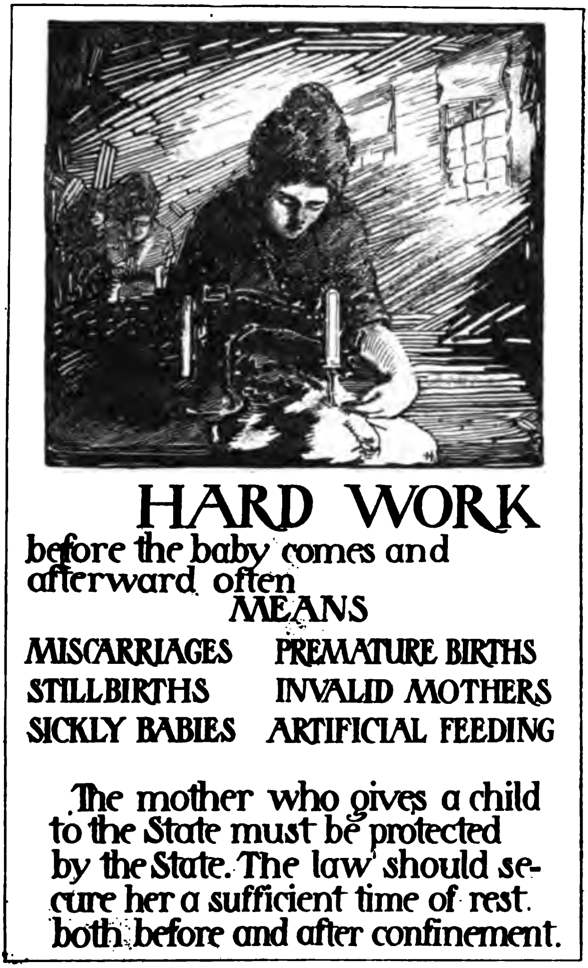
WORRY, FEAR and ANGER
may affect his mothers blood,
which supplies his food.

THEREFORE

she should be CALM, HAPPY
and SWEET-TEMPERED.

Fig. 1.—Poster distributed by National Child Welfare Association.

Propaganda with which we are here vitally interested concerns prenatal care, the competent medical and nursing supervision of the development of infants during the creation period through the scientific care of expectant mothers. This subject is worthy of the serious thought of the great public minds of the world and yet it has never been accorded its meed of public attention. Thorough appreciation of its manifold benefits to humankind have been fully understood only by the obstetrical branch of the medical profession, because it had never been properly set before the people. Although the practice of prenatal care is by no means new, its beneficial effects upon the new-born having long ago been acknowledged by the experts in this science of medicine, it has never been sufficiently encouraged as a public health measure to arouse a concert of public interest in it.



HARD WORK
before the baby comes and afterward often
MEANS

MISCARRIAGES	PREMATURE BIRTHS
STILLBIRTHS	INVALID MOTHERS
SICKLY BABIES	ARTIFICIAL FEEDING

The mother who gives a child to the State must be protected by the State. The law should secure her a sufficient time of rest both before and after confinement.

FIG. 2.—Poster distributed by National Child Welfare Association.

Prenatal care is as near a panacea for human ills as ever will be found and still that part of the populace, the proletariat, to whom we are striving to carry its benefits remains unenlightened, save to a very small degree, it being practically impossible to reach them because of the limited means at the disposal of those individuals and organizations engaged in pioneer work in a few of our larger cities. Until all these forces find strength in unity propaganda; until they coördinate their interests in standard methods of prenatal practice throughout, and use the same high degree of technic in telling of their work as in doing it they cannot hope to attain that measure of progress their cause is justly entitled to.

Prenatal care eventually will achieve its reward but not before its exponents are met in a common purpose; until they have grown so potential that they need not beg for recognition but demand it. Perhaps the greatest deterrent to the dissemination of the advantages of this work has been a seemingly indifferent press. Newspapers are essential to the success of any great propagation undertaking. It was they which made possible the remarkable successes achieved in the divers war campaigns—Liberty Loans, Red Cross, W. S. S., Y. M. C. A., K. of C., Salvation Army and all of the others. These organizations, of course, relied on other ways and means of bringing their purposes before the country in their endeavor not only to awaken the interest of the people but to arouse patriotism in them to such a point that they invested and gave freely and magnanimously. But it was the seemingly limitless power of the press which permitted no dimming of the flame of patriotism. It was the press, through its news, editorial and advertising channels that kept the spirit of the people high; that spurred them to greater effort; that praised them for their generosity if things went well and chided them and cajoled them and yea, even scolded them if they grew lax or allowed interest to wane.

In no other of the globe's countries is the power of the press so puissant as in these United States. Peoples everywhere marvelled at the ready response of Americans to their country's many calls in one form or another during the war; the quickness and dispatch with which full quotas were gathered; the boundless, unstinted support that met request after request for funds for this or that need and yet if they but knew the genius of the American newspaper editors; were aware of the close bond of intimacy that exists between the American newspaper and its public, they would not marvel. But while the press is ever ready to contribute its power to deserving causes it has never extended to the unborn infant, the world's greatest asset, the assistance that is his right. Prenatal care propaganda is spread in the newspapers very meagerly, but blame for this seeming indifference and disregard can hardly, in justice be placed upon the press in the face of that splendid treatment it has been according other public health and welfare campaigns.

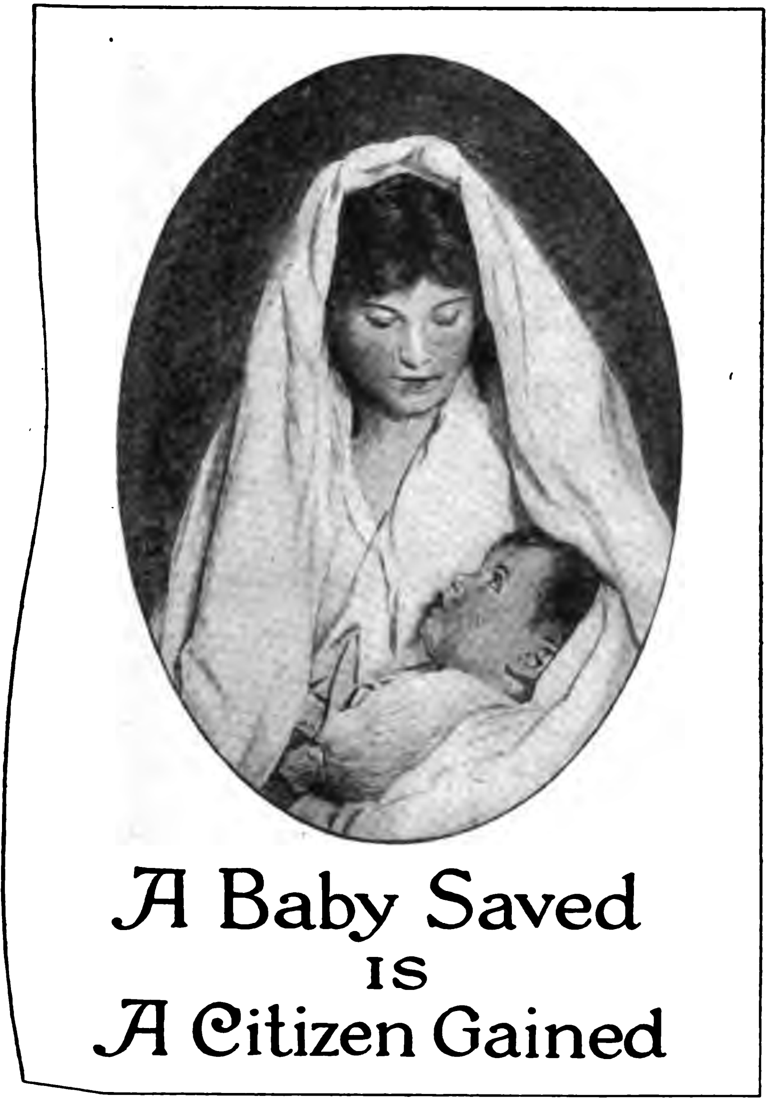


FIG. 3.—Poster originated by New York Milk Committee.

Who then is at fault?

Perhaps it is the propagator himself! I am certain it is he. I have become convinced of this after a long period of close observation. No matter what our particular public health interest is, nor how keen our enthusiasm, unless we possess the power of personality to electrify this into a community interest we cannot expect the press to wax eloquent in our support. The statistical evidence reveals the fact that our most enlightened cities have the lowest general and infant mortality rates. By enlightened we mean a general community appreciation of the value of constructive public health effort making for an enlightened environment conducive to health rather than disease.

Maternity welfare publicity has always been handled too severely, too gravely, too technically, if the term may be applied, to get it seldom anywhere but an inglorious abiding place in the waste heap. It wants to be trimmed in something less somber than mourning bands. It needs to be colored and freshened a bit and associated with cheer now and then.

In the newspapers or in poster or panel display or on the lecturing platform propaganda with the punch pays. Civic effort with punchless propaganda is always pleading poverty.

The difference between the two is the difference between Dr. Jacob Sobel's "First Aid to the Infant" and my "Medical and Nursing Service for the Expectant Mothers" or Mr. Powilson's "Waste of Life, Health and Strength that must be prevented by proper care before and at birth."

In the many years that infant welfare work has occupied the attention of health authorities and divers independent organizations the development of forceful phrases or slogans, the short, snappy sentences that grip the mind and make a deep impress have been few, far too few. Of those that come to mind quickly are:

Paul E. Taylor's "Better Babies" and "A Baby Saved is a Citizen Gained."

Dr. Jacob Sobel's "First Aid to the Infant" and "The Nation that has the Babies has the Future."

Dr. S. Josephine Baker's "No Mother's Baby is Safe until every Mother's Baby is Safe."

Dr. MacMurchy's "A Mother should not Sublet Her Duty to a Cow."

Mrs. William Lowell Putnam's "Education, not philanthropy."

Charles F. Powlison's, "Save the Mother."

How many engaged in prenatal practice are letting folk know about it? Not many. How many of those that are speak of it in a language understandable and interestingly enough to hold the attention of their auditors? You are concerned with what your community should be taught to think about prenatal care. What are you doing to promote the practicability and the praiseworthiness of this work? Are you interesting others in your program? Are you gaining converts? Do your thoughts properly express the value of your endeavors? Interrogate yourself along these lines and discover the extent of your usefulness as a propagator.

Do you preach prenatal care via lantern slides, motion pictures, posters or panels or from the rostrum of the orator? Have you tried the panel form of pleading your case and found that it would not do because you neglected to include the punch? Graphic portrayal of essential facts in the poster or panel form of educational propaganda is a highly developed art or science. Placed in the hands of experts this means of inculcating new ideas and endowing persons with new ambitions and purposes in life becomes very effective.

Poster work in the Liberty Loan campaigns was good, bad and indifferent, but there were so many ideas presented and the cause behind them was so powerful as to be practically irresistible, that it is difficult to judge just what effect they had in the drives. In the last government campaign New York City was a veritable art gallery. The picture pleads, however, did not all average 100 per cent. efficiency in governmental efforts.

Out of the great display no more than two were worthy of credit for effectively carrying the true message of victory to passing throngs. The loan was successful because the stupendous force back of it made a 20 per cent. efficiency in poster propaganda all that was necessary to attain the goal. But in your work and mine every stereoptician slide, every panel, every lecture must count 100 per cent. to get our message over because we lack the power and the magnitude of the United States Government.

In the creation of panels the "punch," more so than in any other form of propaganda, should be paramount. The caption should be such as to catch the eye and hold the attention of the mind. And it should be printed boldly and plainly. A 100 per cent. caption is utterly worthless if dressed in a language foreign to the every day, matter-of-fact American. I am speaking now of styles—types.

The difference in the style of type used in panel work is the difference between a panel that is readable and a panel that is not readable—between a message that is effective and one that is not effective. The purpose of the type on the exhibition panel is to form words which in turn convey ideas rather than contribute an artistic decoration to enhance the beauty of the landscape. Leave the Spencerian flourishes to the Spencerian and remain steadfast to the plain, simple type that the plain, simple folk can read without effort. Better have a poor idea dressed in plain letters and simple words than a good idea smothered in curlicues of alleged art. Letters that stand up without support assist greatly in bringing out the obvious in word meaning. Letters that run together become lost among their own frills and fail to convey their meaning clearly.

Use a drawing that contains a positive idea rather than the darlingest doll baby picture you can find.

Make it distinct and elemental so that a child can understand and appreciate its purport.

Illustrate your words. The best formal drawing and picture is inferior to a cartoon. A cartoon is in itself an exaggeration—and an exaggerated illustration helps carry the message across.

When you are discoursing on your favorite theme—prenatal care—in the intimate circle of your professional friends, be academic to your heart's content. When you are educating the public on this or any other subject—be human. Remember you are telling it to the world—tell it so the world can understand.

Chicago has employed the dramatic in public health propaganda for a number of years. Dr. S. Josephine Baker has popularized conservative dignity in her educational public health propaganda for babies and children. Both have been successful to a marked degree. Take your choice.

Dr. Truby King of New Zealand, alone and unaided, introduced prenatal care to the entire country. He had but one idea. In the large cities of the United States it is the very wealthy and the very poor that receive the best obstetrical service. Those between these two extremes cannot afford nor have they been educated to demand this high type of service.

When Dr. King initiated his program in New Zealand only the wealthy were receiving proper obstetrical care. It was his task to extend it to all. He succeeded with one idea.

When we start public health or welfare work here, we locate the poorest and most miserable section we can find, move our staff and equipment there and proceed to give to the inhabitants something they have not asked for and did not know they needed.

When Truby King started his prenatal work in New Zealand, he enlisted the coöperation of Lady Plunkett and her friends. Then he opened a maternity clinic on New Zealand's Fifth Avenue. Lady Plunkett and her friends were his first patients. The rest of New Zealand's mothers naturally followed the prevailing fashion.

That was Truby King's idea.

105 East Twenty-second Street.

CLINICAL CASE REPORTS.

A CASE OF SINGLE AMNION TWIN PREGNANCY.

BY

OLIVER N. EASTMAN, M. D.,

Burlington, Vt.

(With one illustration.)

THE existence of single amnion twin pregnancy is unusual and when complicated with hydramnion presents clinically as well as pathologically an interesting and unique abnormality.

Mrs. L. G., aged twenty-four, housewife, para-iii. Admitted to the obstetrical ward of the University of Vermont College of Medicine on Nov. 17, 1913, at 6 A. M. after a twenty-mile journey in an auto.

Family History.—Negative to tuberculosis, malignancy or plural pregnancies.

Personal History.—Measles at eight years of age. Previous two pregnancies terminated with normal deliveries, child of six years living and well, second child died when three months old from an unknown cause, a spontaneous abortion occurred between first two deliveries also a similar abortion occurred between birth of second child and last pregnancy, no known cause for either abortion. Last monthly period ended May 4, 1913, after four days of normal menstruation and pregnancy progressed normally until about the middle of Oct. when pain, dull in character, continuous and nonradiating developed in right side at about the level of the umbilicus and during the following four weeks pain seemed higher and nearer midline and on Nov. 14, 1913 at 3 P. M. the pain which previously had continued dull suddenly assumed a stab-like character and continued sharp until the interruption of pregnancy. Active movements or quickening were experienced before the sharp pains developed and were especially noticeable about that time but have been absent since.

On the following day, Nov. 15th, the pain became more acute but less lancinating in character and she noticed that her abdomen was increasing in size, also that her ankles were swelling, and these continued to increase each day following.

Objective symptoms. Nov. 17th. Temperature 98°, pulse 100, respiration 28. Heart and lungs negative. Ankles markedly edematous. Signs of pregnancy present in breasts. Abdomen was markedly distended, with a flat umbilicus and a protrusion in the upper right quadrant, skin shiny, veins prominent, central pigmentation.

On palpation abdomen was tense and elastic, fundus of uterus not found.

On percussion flat note was observed with an area of resonance in left flank, fluctuation was pronounced over abdomen. Abdominal ballottement not present.

On auscultation no fetal heart sounds were audible.

Vaginal examination showed the vulva edematous, cervix central, external and internal os dilated one finger, membranes intact and protruding, lower uterine segment well thinned, ballottement present with head of fetus readily descending into brim of pelvis. Nov. 18th and 19th abdomen became more tense due to increase of fluid, dyspnea became more marked and a nose bleed developed.

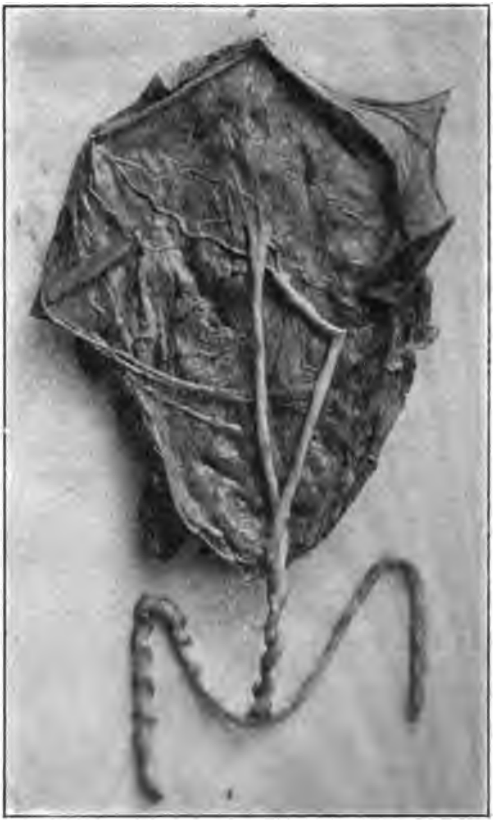


FIG. 1. —Secundines from a twin pregnancy showing disposition of membranes.

Nov. 20th amniotic sac punctured, permitting the escape of over 8 quarts of fluid, labor pains developed two and one-half hours later and two fetuses were spontaneously delivered, both presented vertex, both stillborn. Uterus contracted firmly with little more than a normal amount of bleeding, placenta expressed an hour later. Except for cyanosis lasting for a few hours the patient made a normal convalescence. Fetuses both males, 15½ inches in length, one fetus has but one hypogastric artery and the heart of this fetus was a third larger than the heart of the other fetus. The umbilical cords were each 24 inches in length and there were four turns one around the other. The placenta was intact, with two cords and but one amniotic sac (Fig. 1), no evidence of a partition being present.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

Forty-fourth Annual Meeting, Held at Atlantic City, New Jersey, June 14, 16 *and* 17, 1919.

The President, DR. FRANKLIN H. MARTIN, *Chicago, in the Chair.*

An address of welcome was delivered by DR. WALT P. CONAWAY, of Atlantic City, which was responded to by DR. LEWIS S. MCMURTRY, Louisville, Kentucky.

DR. RALEIGH R. HUGGINS, of Pittsburgh, read a paper on the

TOXIC EFFECT OF FIBROID TUMORS OF THE UTERUS.

HE said that a review of the work already done in the study of fibroid tumors of the uterus would lead to the conclusion that there was very little left to say about the pathology or clinical manifestations associated with their growth and development. In a larger way this was true, but it seemed that we still viewed with complacency some of the complications which, while not always serious, were, nevertheless, important and should command our attention. In the absence of other symptoms it had been suggested that the absorption of toxins incident to the growth of fibroid tumors might account for certain changes in the heart muscle, which undoubtedly occurred in a high percentage of cases. The final proof of this theory remained for the chemist to determine, but in the meanwhile it was important that we as clinicians did not overlook certain changes, which under other circumstances were commonly accepted as due to toxic products. The frequency of nervous symptoms, oftentimes mild in character, but not infrequently severe, the relatively large number of cases of infection of the kidney secondary to even small fibroids where there could be no question about the absence of pressure upon the ureter or other causes, all pointed strongly in favor of such theory.

Since Kasprezig in the year 1881 first called attention to the frequency of weakness in the cardiac muscles associated with uterine myomata, about twenty-five articles had been written by gynecologists and surgeons on this subject. It was the concensus of opinion that heart changes were present in from 40 per cent. to 50 per cent. of the cases. This had been learned from sad experience oftentimes, and there could be no doubt that the severity of the disturbance to the heart action in some of these cases during and following operation was secondary only to that which occurred in thyroid disease. In early years "paralysis of the heart" was given as the cause of death after autopsy had revealed no other excuse.

Fleck made pathological examinations which led him to conclude that brown atrophy of the heart muscle was characteristic of fibroids without hemorrhage, and that fatty degeneration was present when profuse hemorrhage accompanied the growth. He also believed that the change in the heart muscle was explained by abnormalities in metabolism. He made a study of 325 cases and found either functional or organic changes in 40.8 per cent. In every instance, where an autopsy was made, definite cardiac changes were found; *e.g.*, fatty degeneration, brown atrophy, etc. He did not believe the heart changes were due to loss of blood because out of 133 cases in which there had been no hemorrhage, cardiac changes were present in 34.6 per cent.

In reporting fatal cases where death occurred several days following operation, Deaver states that "while some of these deaths may be attributed to shock and exhaustion, yet I am convinced that in a number death was caused by preëxisting cardiac and cardiorenal disease." Boldt in a study of his own autopsies had always found degenerative changes in the heart muscle, whether or not the neoplasms had given rise to menorrhagia. He further stated that clinical experience taught that patients with myoma had a weak heart muscle.

Winter insisted that an etiological relationship between myoma and heart disease had not been proven, and that the heart was influenced only by the secondary anemia due to the hemorrhage which was caused by the myoma. He admitted, however, that 60 per cent. of a series of 266 cases, where a study of the heart was minutely made, showed a "myoma heart." Such change in the heart muscle was not infrequently recognized by men of large experience.

Kelly had recently said "that in relation to the uncertainty of recovery following operation in both skilled and unskilled hands, there was the ever-present dread of cardiac embolism often occurring about the time the patient was superintending the packing of her grip, happy in the anticipation of the home welcome."

Any operator of experience would appreciate this statement and agree with the same.

It was perhaps true that sudden death, which occurred several days after operation and attributed to cardiac or pulmonary embolism, was often really the result of a dilatation of the heart secondary to a weakened muscle. Careful autopsy reports were not often given, and a study of the clinical symptoms suggested that the diagnosis of embolism was made because of habit.

No particular form of cardiac degeneration was distinctly attributable to myomata, but it was logical to conclude that fatty degeneration was the most frequent change. That arteriosclerosis was occasionally found without any other associated cause was quite evident. He had been interested in a number of cases where there was an absence of hemorrhage or other complications, but in whom were found marked clinical signs of a weakened cardiac muscle. The condition was so plainly evident in some instances that it was necessary to keep the patient at rest for several weeks before operation could be undertaken without serious risk. This had occurred when the tumor was small and under ordinary circumstances would be classified as a so-called symptomless fibroid.

A group of symptoms overlooked and often given but scant consideration were those referable to the nervous system. Certain individuals were very susceptible to even the slightest absorption of toxic products. It was for this reason we found such a wide variation in the degree of such symptoms associated with fibroid tumors. Observation would lead to the belief that the type of woman who showed susceptibility to the toxins of pregnancy was also likely to show nervous symptoms from the effect of a growing myoma. The disturbance might be mild, but not infrequently it was quite severe, and might result in a serious mental impairment. This did not occur in women with stable nervous organization to any marked extent, but careful study showed its presence to a greater or less degree in so many instances that it could not be dismissed without consideration. The frequency with which such symptoms occurred secondary to toxic effects in other conditions was well recognized and led him to conclude that there was no question about the relationship. A study of his histories showed the presence of nervous symptoms in cases of so-called symptomless fibroids sufficiently often to attract attention. That the toxicity incident to a disturbed thyroid secretion was markedly increased by a growing fibroid was quite apparent.

The frequency with which urinary disturbances associated with fibroids were found was also of interest. The element of mechanical interference with the ureter must always be taken into consideration, but casts, albumin and pus occurred in a considerable percentage where there was no such pressure. This could not be assigned as a cause when the fibroid was small or located in such position that it interfered in no way with the ureter. In large growths it might be a factor. For a long time it had been his belief that pyelitis in the early weeks of pregnancy could be due to no other cause than infection which resulted from a lowered resistance of the individual, secondary to absorption of the toxic products of pregnancy. That it occurred in patients with other toxic symptoms, and that the severe cases occurred most frequently in primipara and often in the early weeks, all favored this conclusion.

The same effect apparently occurred in fibroids where the individual was susceptible, with the result that a most persistent infection of the pelvis of the kidney was produced. He had treated several patients for a chronic pyelitis without any apparent relief, who had small tumors of the uterus, and which in no way blocked the ureter. They sought relief for pain in the affected side and bladder symptoms, rather than any symptom directed to the growth itself. In several cases of this kind persistent treatment of all kinds, including irrigation of the kidney pelvis, failed to cure the infection, and it had been his experience that where this condition had persisted for a long time that even after the removal of the tumor, the urinary symptoms persisted. This was due to involvement of the deeper kidney structure, so that eventually if a cure was obtained it was through the removal of the kidney. Delay in early diagnosis as to the cause of such a change in a kidney was therefore fraught with serious consequences to the patient.

In the briefest way he ventured to report a few cases which had drawn his attention to the importance of considering this phase of the subject. The examples given represented the effect upon the heart and kidneys. If space would permit the detailed report of six cases of temporary insanity associated with fibroid tumors would be strongly corroborative. In all, bleeding and pressure symptoms were absent and the patients recovered their normal health after the removal of the growth.

Until this problem was solved by a better knowledge of what happened, when cells multiplied under abnormal stimulation, all deductions were purely speculative. Much of the progress had been made by the suggestions offered through clinical studies and without them the chemist would find little inspiration.

It might be that more careful observation of the character of the cells, the lymphatics and blood-vessels in these so-called benign growths and the correlation of the same with the clinical symptoms in the individual patient would lead to a better understanding of this interesting subject.

The author detailed eight cases to support the views he had advanced.

Dr. J. Riddle Goffe, of New York City read a paper entitled

THE ORIGIN OF THE INTRAPELVIC TREATMENT OF THE STUMP AFTER SUPRAVAGINAL HYSTERECTOMY FOR FIBROID TUMOR OF THE UTERUS.

He did not doubt that the present method of disposing of the pedicle after supravaginal hysterectomy for fibroid tumors, which was employed almost universally by operators today and viewed by thousands of students, was regarded by them as obviously the most natural way. But the history of the development of this procedure presented an entirely different picture. The various efforts to remove fibroid tumors were fraught with great suffering and pain to the patients, attended by most unsatisfactory results, and followed by a frightful death rate.

The method naturally suggesting itself was that employed in removing ovarian tumors, viz.: to constrict with a ligature, usually rubber elastic, a steel clamp, a wire or chain ecraseur, to bring it up through the abdominal wound and transfix it with long pins, which extended out over the abdomen to keep it from slipping back into the abdominal cavity. The *first* consideration was to control the hemorrhage and the *second*, to prevent infection from the sloughing stumps.

The after-treatment was a source of constant solicitude and consisted of watchful care of the stump, turning the key of the ecraseur or the nuts of the clamp every day or two as the pressure cut into the pedicle or the tissues shrunk. When necrosis began, the stump was kept moist with sulphate of iron or dried with iodoform powder. It was difficult to prevent infection, and often the patient died of septic peritonitis or the pedicle tore away and fatal hemorrhage ensued. The death rate was appalling.

Such was the treatment of fibroid tumors during Dr. Goffe's internship at the Woman's Hospital, 1881–1883. The death-rate from hysterectomy for fibroid tumors was from 30 to 50 per cent. and even higher. The few that recovered endured a long painful sickening convalescence of from six weeks to two or three months, many of them being crippled for life by a painful distorted bladder, the aching drag of the stump upon the abdominal wall or a ventral hernia.

The horrors of the operation and the sad fate of these unfortunate patients made a deep and abiding impression. He had not yet begun any systematic reading of either current medical literature or any standard works, and he knew nothing of what was going on in the surgical world outside of what he himself had seen. He could not, however, get away from the conviction that sometime, some way would be devised of treating the pedicle after supravaginal hysterectomy so that it could be dropped back into the abdomen and the cavity closed as in ovariotomy. The conditions upon which such an effort should be based were, that it must be safe, safe against hemorrhage at the time of the operation (for he had seen patients die of hemorrhage upon the operating table), safe against subsequent hemorrhage, and safe from sepsis due to suppuration of the stump.

These three essential factors were constantly before his mind, and he considered them in every aspect. With a clamp upon the cervix, it could not, of course, be dropped into the pelvis, but why a clamp? Why not a ligature? If in ovariotomy the pedicle ligature did not slip or relax till the blood-vessels were occluded, why should it not accomplish the same results here? Or perhaps the ligature might be so placed as to compress the blood-vessels against the cervix as they coursed through the broad ligaments, and thus afford hemostasis. The elastic ligature applied before the fundus and tumor were cut away, as in Stimson's operation, accomplished this. Why not the ligature? Of course the pedicle must be transfixed to prevent slipping of the ligature. Well, the bladder had to be dissected off the tumor and the uterus to apply the clamp; the ligature must be applied in the same place by transfixing the cervix with a double ligature, tying either side and throwing the bladder over it. It seemed feasible, but would he dare to do it? Had any one ever dared to do it? Not that he had ever heard, nor did he know, that any one had ever suggested it.

With the picture in his mind, Dr. Goffe said that he carefully considered, the successive steps of the standard operation that he had seen: namely, (*a*) the abdominal incision, the curved incision over the bladder, the turning down of the bladder and its peritoneal flap out of harm's way, the application of the elastic ligature around the whole mass of uterus and broad ligaments, the amputation of the mass, the adjustment and tightening of the clamp, the removal of the elastic ligature, the passing of the long pins through the cervix underneath the clamps, the stitching of the bladder and cervical peritoneum to the abdominal peritoneum to prevent leakage into the abdominal cavity, the adjustment of decalcified bone drains and gauze packing and the final stitching up of the wound. (*b*) Then he would go over the steps of his fancied procedure, comparing one with the other, step by step, but always with the conviction that it had in it the promise of success and was worth a trial.

Dr. Goffe then reported the following case which came to him on May 26, 1888; Ann McE., cook, aged forty, married fourteen years ago; husband lived only five months; has remained a widow since; never pregnant; menstrual history normal. For the past three years has suffered backache and difficult and painful defecation for the past six months, frequent and painful micturition. The latter had so annoyed and worried her and deprived her of sleep, that she had lost flesh and she was in a desperately nervous condition.

She had consulted a prominent gynecologist of New York, who told her that she had a tumor and sent her to the Woman's Hospital for observation. She entered the service of Dr. Thomas Addis Emmet. After repeated examinations she finally was dismissed with the opinion that if any operation were attempted, she would die upon the table; especially must she avoid any ambitious young doctor who might want to operate upon her. The following day, May 26, 1888, she appeared at his office, told her story and wanted to know if he could do anything.

Upon examination a hard, irregular fibroid tumor was found, with deep serrations, entirely filling the pelvis, and so firmly wedged in that even the slightest motion was impossible. Large nodules, also, reached up into the abdomen. He told her he believed he could relieve her; that the tumor could probably be lifted out of the pelvis, and, if favorable for complete removal, could be taken away. She entered St. Elizabeth's hospital and three days later, May 29th, with the assistance of Drs. A. P. Dudley, Marcus E. Tulley and Tucker, he operated. The tumor was with the greatest difficulty lifted out of the pelvis, and he proceeded at once to its removal.

The first step was to dissect off the bladder, which had spread itself over the anterior face of the tumor to the height of six or seven inches. This was done by following the curve of the attachment of the bladder in an elliptical incision through the peritoneum across the face of the tumor, and dissecting off the bladder down to the vaginal junction. An elastic ligature was then thrown around the entire mass exclusive of the bladder, but including the ovaries and tubes of both sides, securely tied and the main part of the tumor cut away. Before severing the connection of the broad ligaments, the uterine extremity on each side was grasped by a strong clamp forceps to prevent its slipping out of the ligature. The pedicle was then transfixed below the elastic ligature, but within the flap with strong Chinese twisted silk, and tied on either side like the pedicle of an ovarian tumor. The elastic ligature was then removed. There had been no loss of blood except what escaped from the tumor when it was cut away, and a constant slight oozing from the flap that had been dissected off with the bladder.

The stump was then trimmed down as near to the ligature as was deemed safe and the opening of the cervical canal thoroughly cauterized with pure carbolic acid. The large extent of raw surface on the bladder flap was drawn over the top of the stump like a hood for, he believed that if it were drawn tightly enough, primary union might be secured and the distal end of the stump nourished through the flap. If not, the cervix could be dilated and used as a drainage tube. This was accordingly done, the flap reaching well down on the posterior surface of the stump below the exit of the ligature, where it was firmly stitched along its entire border with continuous catgut suture. The stump was thereby shut out of the peritoneal cavity, and was dropped back into the pelvis. The abdominal wound was closed with silk and the patient put to bed. The tumor was a hard multiple subperitoneal fibroid, extremely irregular in shape and weighed 6½ pounds.

The patient rallied well from the operation, was free from pain with the exception of a slight backache, and had no untoward symptoms till the fourth day, when the temperature went up to 101.5° F., and the fifth day to 102°. This meant suppuration in the stump under the flap with danger of pus bursting into the peritoneal cavity unless an exit was made for it some other way. He therefore through a bivalve speculum exposed the cervix and passed without difficulty a Simpson sound and then the steel dilators. A gentle amount of pressure gave exit to a very slight amount of serous pus. A double female catheter was then passed and the cavity washed with carbolized solution, after which a nickle drainage tube about 2 inches in length was inserted, to which was attached a rubber tube leading out of the vulva to carry off the discharge. The dilatation was repeated every third day and the cavity thoroughly washed through a catheter for four sittings, after which the temperature continued normal, and the discharge was reduced to that of a slight leukorrhea. The patient regained her strength rapidly, was sitting up at the end of three weeks, and upon the 29th of June, just one month from the day of operation, she rode in the Broadway street cars a distance of at least three miles, walking to and from the hospital to the car line. Shortly after this she went to the country for the summer. In September she appeared at his office, fleshy and well, but complained of a sligh tmoisture about the vagina. Upon examination bimanually he found the stump smooth, freely movable, and about the size of a virgin uterus. Upon passing the speculum a white silk thread was discovered presenting at the external os, which, upon being lifted out proved to be the ligature. The patient continued in perfect health and, despite the fact that she had neither uterus, ovaries, nor Fallopian tubes, was a second time married in October of that year.

The operation was indeed a triumph. Hemorrhage was perfectly controlled so that the patient lost no blood either at the time of operation or subsequently. To be sure suppuration had occurred, but the peritoneal cavity was protected against invasion by the peritoneal flap covering the stump and evacuation of the pus promptly and readily secured through the natural cervical canal. Consequently the patient had survived the operation and gotten well as comfortably as after an ovariotomy. What was more, the remaining organs of the pelvis were restored to almost ideally normal positions and relations, all traumatic tissue was disposed of with the nicety of a plastic operation, and the abdominal and pelvic organs resumed their functions normally and satisfactorily. Two cases followed this the succeeding year, in both of which all the steps of the procedure as described were carried out, the same experiences attended the convalescence, and the results were the same.

The credit for inventing such a procedure was an honor worth guarding with jealous care. The procedure was in some clinics called the Baer operation and by many believed to have been invented by him. Regarding this he desired to make the following animadversions.

His operation was a successfully demonstrated, widely published and well-recognized procedure before Dr. Baer performed his first operation. That Dr. Baer was perfectly familiar with his work was apparent from the internal evidence of his article itself. His title "Supravaginal Hysterectomy Without Ligature of the Cervix," evinced an effort to put his work in as strong contrast to his (Dr. Goffe's) as possible. Then the emphatic statement reiterated, that no antiseptic was applied to the cervix, and the seeming indifference to covering the stump with peritoneal flaps bore out this contention, although later he adopted both of these steps in his technic. In his fourth case he applied clamps to the upper border of the broad ligaments and ligated both ovarian arteries in conintuity in the broad ligaments. This was fully described in his original paper and illustrated by drawings showing just how the clamps and ligatures were applied. What was more he ligatured the uterine vessels in the broad ligament on one side as an emergency, and that was what Dr. Baer said he did in his first case. Why he did not appreciate then and there the refinement of this procedure and applied it to the uterine vessels on the other side and so establish that step in the technic he could only explain by the overpowering mental impression inherited from the old operation that the cervix must be compressed. In retrospect this was more to be wondered at because in the meantime Lewis Stimson had become a convert to the application to fibroid tumors of Freund's operation of total hysterectomy for cancer, and minutely described and laid great stress upon the method of ligating the blood-vessels in continuity in the broad ligaments. He published two articles on this subject, one in the *New York Medical Journal* in 1889, and one in the *Philadelphia Medical News* in 1890.

Both of these articles appeared before Dr. Baer did his first operation and must have been very suggestive to any one approaching the subject with an unbiased mind.

Dr. Edward E. Montgomery, of Philadelphia, read a paper entitled

UTERINE MYOMATA, WITH SOME OF THE COMPLICATIONS SEEN IN PRACTICE.

(For original article see page 256.)

These three papers were discussed jointly.

DISCUSSION.

Dr. John Osborn Polak, of Brooklyn, stated that there was a higher blood pressure in women with fibroid tumors of the uterus. In a long series of cases he found that the blood pressure in fibroids was higher than it was in the average woman without fibroids. The kidney function was frequently deficient in the fibroid cases and in order to estimate the safety of operation, there should be a relation between the pulse pressure and the kidney function. Hypertension was not such a serious matter if the pulse pressure, divided into the systolic pressure, was as one to three, whereas the kidney function was over 50 so far as the phthalein test was concerned. If one found there was a relation of one to two or less between the pulse pressure and the systolic pressure, these patients were bad operative risks just as though one found deficient functional kidney tests.

In the last year he had operated on three cases for recurrent cancer of the cervix where a fibroid had been previously removed by supracervical hysterectomy. He had had two cases of rupture of the uterus during pregnancy following myomectomy, consequently he limited myomectomy very largely to the class of cases that Dr. Montgomery had described. The most frequent complication he had found from fibroid tumor in pregnancy was necrobiosis. It appeared to occur suddenly as a result of circulatory changes. He had seen these patients operated on for appendicitis on several occasions because of the acute and sudden pain, and yet the history, the sequence of symptoms, and leukocytosis referable to the tumor had been so distinct that he could hardly see how that diagnosis could be made.

Dr. Barton Cooke Hirst, of Philadelphia, stated that in the vast majority of cases of fibroid tumors complicating pregnancy the women ought to be let alone, but he often depended on four indications: Intense pain which he had never seen equalled except in pregnancy with fibroid tumors; disturbance of the kidney function from intraabdominal pressure, with toxemia, and such an increase in the growth as to weaken the individual from abdominal distention, and finally, if the tumor was sure to obstruct labor, the only sensible thing was to elect an operation two weeks short of term and do a coincident Cesarean section and hysterectomy.

He had had occasion in the last eight years to refer a number of women with fibroid tumors to the röntgenologist, not deeming them safe subjects for operation. Every one of those women had been completely cured, in that in the majority of them there was no fibroid tumor left, although when he referred them they had tumors reaching up to the umbilicus and some had been larger, so that he had come to the conclusion that it was better for the gynecologist when a woman presented herself with a tumor of moderate size, particularly a young woman, to send her to the *x*-ray man and let him try his hand on her first, and then operate on her in case he failed.

Dr. Leroy Broun, of New York City, said that unquestionably Dr. Goffe's claim of priority was correct where the stump was dropped intraperitoneally. He tied off the stump. Baer also tied off the stump, but according to his own statement the ligature slipped, and to his delight, after having tied both the uterine and ovarian arteries he found it did not bleed. While he did not wish to detract in any way from the credit that should be given to the right man, still he felt from the literature that the present technic should be credited both to Dr. Goffe and Dr. Simpson for his suggestion of tying off both the uterine and ovarian arteries.

With reference to fibroid tumors of the uterus, the general practitioner should be impressed that they are not so simple as they had been taught to believe, and it was largely the fault of gynecologists that the general practitioner looked on a fibroid tumor as not being malignant, but benign, and could be treated by any of the newer methods.

In the number of cases they had analyzed at the Woman's Hospital extending over nine years, there were 1760 cases in which, on account of disturbances in circulation, fully 5 per cent. of the tumors had undergone necrotic changes; 1½ per cent. had undergone calcareous changes. There was present in 25 more, carcinoma of the body of the uterus. None of these cases would be recognized ordinarily by the general practitioner, and the radiologist was much less able to appreciate the coincident conditions. Of ovarian and tubal conditions, not including ordinary salpingitis as a result of impeded circulation, they had had 7 per cent. in this collection.

Dr. Lewis S. McMurtry, of Louisville, Kentucky, thought the percentage of cardiac disease complicating fibroid tumors, as given by Dr. Huggins, was too large. Every operator in gynecological surgery could furnish a long list of operations for fibroid tumors, as this was one of the most common conditions that presented itself. In such a large number of patients it would be impossible not to find a very considerable proportion of cases in which there was cardiac disease, just as the same condition would complicate any other abdominal tumor or abdominal disease. But it was comparatively rare that cardiac complications were of serious import. The percentage of recoveries in cases of fibroid tumors treated by surgery was very large; the mortality was very small, and consequently the number of cases in which cardiac disease obtained must be relatively small.

With reference to Dr. Goffe's paper, it was pleasing to the members to have laid before them Dr. Goffe's early original work in connection with this operation, which was so very creditable to him. Mr. Tait set this operation before the profession in a way to cause its universal adoption. Up to the time of Tait the operation was on an insecure basis. Mr. Tait operated with the *serre neude*, which was invented by Koeberle, and Keith, whose brilliant results were not surpassed by any man of his day, also operated with the *serre neude* in the extraperitoneal treatment of the pedicle; at the same time, Washington Atlee and Clay operated by treating the pedicle of the ovarian tumor in the lower angle of the wound, transfixing it by clamp in the same way. Mr. Tait always maintained that this was a makeshift, that it was crude and always accompanied by a slough, and through the labors of Dr. Goffe and others, the technic being changed from time to time, it made the operation for fibroid tumors one of the most definite and most complete operations that was known in any department of surgery.

Dr. Charles P. Noble, of Radnor, Pennsylvania, stated that when gynecological patients with fibroid tumors of the uterus were not relieved because of heart or other degenerative lesions, as were patients in other fields of medicine, it was a factor that should not be overlooked. There was no doubt that toxemia was the usual cause of these degenerative lesions, and it was not essential to assume that the toxic agent came from the fibroid tumor simply because the patient was toxic from the fibroid. The usual sources of toxemia were the bowel or infections, and these could operate in fibroid tumor patients just as well as in other patients. As a matter of fact, both from pressure in interfering with the movements of the bowels and from the fear when the patient knew she had a tumor, one had the actual conditions which brought about toxemia from copremia which was so common in medicine in general.

As to the history of the evolution of the supravaginal operation, most sound inventions seldom sprang from the brain of a single man. Different people at different times contributed this or that detail and finally the evolution became complete. The first operation for fibroids of the uterus was done by Kimball, who dropped the pedicle. In the 1884 edition of Emmet's book, Kimball described covering the dropped pedicle with the bladder as a flap. All were more or less familiar with Dr. Goffe's valuable contribution. He transfixed and ligated the stump, which produced suppuration. Baer's contribution to the subject was what Dr. Goffe had omitted. In other words, by not ligating the cervix he did not devitalize it to eliminate suppuration; he borrowed the Emmet flap, and through Freund's work on cancer and Stimson's of ligating the arteries, as well as through various other contributions, gradually the operation was evolved.

Dr. Arthur H. Curtis, of Chicago, said that four years ago he undertook to make bacteriological studies of uterine fibroids in the hope of throwing some light on the etiology of their development. The results of this work were published in the *Journal of Infectious Diseases*. There were eighty-seven cases studied. All these tumors were removed under aseptic conditions. The tumors were ground up and cultures made in every conceivable way, including numerous anaërobic cultures in each instance. As a result of these studies, no evidence was found of infection which had anything to do with the development of the tumor. It would seem on this account that the assumption of a focus of infection in uterine fibroids, which played a part in the development of metastatic foci in other organs, was quite untenable.

DR. HUGGINS, in closing the discussion on his part, agreed with Dr. McMurtry that the statistics quoted by him were too high. There might be other conditions present in a woman which could weaken the cardiac muscle or predispose to high blood pressure, or have something to do with infection of the urinary tract.

He was very sorry if Dr. Curtis had any idea that he (the speaker) believed there was some source of infection in the fibroid tumor that in any way contributed to a pyeliits or any urinary change, because what he tried to point out was that we had undoubtedly in the toxemia of pregnancy very frequently a complicating pyelitis.

While there was a low mortality following operations for the removal of fibroid tumors, yet every once in a while a woman died suddenly after operation. A careful examination of the heart muscle previous to operation and during the stay of the woman in the hospital would furnish the explanation.

DR. GOFFE, in closing the discussion, stated that in discussing Dr. Baer's work the position he took was that the systematic transference of the ligature of the arteries in the broad ligaments was a refinement. It did not constitute a new operation by any means. With the Goffe operation, in all the steps of the procedure he had had four successive perfect results. The first four cases he operated on he reported in his paper. Baer in his paper reported ten. The speaker had no deaths, while Baer reported ten cases with one death, and then Dr. Goffe followed with a report of a series of fifteen cases, with one death. Baer followed that with another series of twenty-six cases, with two deaths. His results were no better than those of the speaker.

DR. ALFRED BAKER SPALDING, of San Francisco, presented

A STUDY OF FROZEN SECTIONS OF THE PELVIS WITH DESCRIPTION OF AN OPERATION FOR PELVIC PROLAPSE.

DR. SPAULDING stated that according to Halban and Tandler, the pelvic fasciæ might rupture immediately behind the symphysis giving rise to a sliding cystocele or urethrocele, or between the cervix and the bladder, permitting cystocele with prolapse of the uterus, or between the cervix and the rectum, as seen in some cases of prolapse with rectocele, or finally behind the rectum causing prolapse of the rectum.

A year ago Chipman, in an address before this Society, designated these conditions as sacro-pubic herniæ and described a method for closing the various hernial openings. In recent years several other good methods for the cure of pelvic hernia had been proposed.

Some of these operations, however, served only to cure the cystocele, while permitting the prolapse of the uterus to recur, while others supported the uterus without curing the cystocele. A few operations seemed to owe their popularity more to the ease and rapidity with which they could be carried out than to the degree of permanent relief the patient might obtain. The entire subject of pelvic prolapse was a complex one, and while it was self-evident that very often the lacerated, over-stretched, atrophic mesh work of fasciæ and muscles of the pelvic diaphragms could not be restored to anatomical completeness, still it was also clear that a knowledge of the anatomy of the pelvic fasciæ and muscles was a help in operating, and an understanding of the close relation existing between the pelvic fasciæ and the many venous plexuses was of aid in preventing such postoperative complications as hemorrhage, pelvic hematoma, sloughing and fistula formation.

For these reasons and for the purpose of correlating the surgical values of the various pelvic fasciæ with anatomical descriptions, he had made a study of the pelvis of a thirty-two year-old nullipara which had been frozen and cut into four segments.

The first section of this pelvis began at a point seven centimeters above the symphysis on the abdominal wall, passed downward and backward through the acetabulæ laterally, to end in the coccyx, just below the sacrococcygeal joint. The plane was slightly higher on the right side. It passed above the bladder in front, severed the uterus just below the internal os, and the rectum posteriorly. The distended rectum had dislocated the cervix somewhat to the right. The upper surface of the first segment had been photographed.

A strong thick mass of vascular tissue surrounded the cervix. On either side could be seen the superior edge of the obturator internus muscle covered by the obturator fascia. The levator ani muscles did not appear at this level, but a thin band of coccygeus muscle could be seen posteriorly. Overlying the obturator fascia was the pelvic fascia which passed under the peritoneum to the sides of the bladder to form its lateral true ligaments. On the right side of the rectum the sacrouterine ligament was seen quite well developed.

The second section passed in a plane 2 cm. below the first. It severed the bladder, the external os of the cervix, the vagina and the rectum, passing to a point just below the tip of the coccyx. The anterior true ligaments of the bladder were seen well developed; also the lateral true ligaments of the bladder were present. Both of these ligaments could be traced into the fascia called the endopelvina, which joined the pelvic fascia to form a line of thickened, tough, fibrous structure called the arcus tendineus or white line. On either side was the well developed obturator internus muscle covered with its fascia. About midway posteriorly, at a point which was somewhat lower than the arcus tendineus, could be seen the origin of the levator ani muscle from the obturator fascia, forming a less well marked white line called the arcus tendineus musculi levatores ani. These muscles surrounded the rectum, some fibers passing to a point near the tip of the coccyx

Of surgical interest was the layer of vascular fascia, nearly one and a half centimeters thick, which lay between the bladder and the vagina and joined the fascia endopelvina at the true white line. This fascial layer appeared to be intimately interwoven into the walls of the bladder and the vagina, but with care could be separated without hemorrhage from each. The overlapping of this fascia after separation from both the bladder and vagina as far as the white line gave exceedingly strong support to the bladder when herniated as in cystocele. Between the rectum and the vagina the same vascular, fascial layer, somewhat less in thickness than that between the bladder and the vagina, could be seen, as well as the thick levator ani muscles, covered above and below by fascia which joined the obturator fascia at the point of origin of the levator ani muscles.

The third section of the pelvis passed one and a half centimeters below the second section at the ventral point, and two centimeters below at the dorsal point. On the ventral point the section began just above the symphysis pubis, passed downward and backward along the posterior surface of the symphysis to sever the urethra at the base of the bladder, the vagina and the anal canal. The urethra and the base of the bladder were strongly attached to the lower part of the symphysis and the vascular fascial walls of the vagina were attached along the anterior cornua closely to the arcus tendineus.

The fourth and most inferior section of the pelvis was made parallel to the above, two centimeters lower and passed along the anterior surface of the symphysis to sever the urethra and vagina near the vulvar orifice. It showed, in part, the joining of the fascia of the vaginal walls with the deep layer of the triangular ligament.

A year ago, Rawls, in a paper on cystocele, covered the literature on the operative history for the cure of sacropubic herniæ. In this list was the operation described by Watkins of interposing the uterus between the bladder and the vagina, and the modification, suggested by Jellett, of dissecting, *per vaginam*, the sacrouterine ligaments and transplanting them to the anterior surface of the uterus. Some years ago these operations were utilized in the Women's Clinic at Stanford, in an effort to cure marked conditions of prolapse, with cystocele and rectocele. In general, good results were obtained, but occasionally, following the dissection of the sacrouterine ligaments, postoperative hematomata would form, giving a stormy convalescence which required in some instances further operative interference for the relief of pain, or for the purpose of drainage. Without the Jellett procedure, several patients operated by the Watkin's technic suffered with recurrence, particularly in regard to the cervix and rectum. Resort was then made to the Goffe operation, which consisted in removing the uterus *per vaginam*, suturing the crushed stumps of broad ligaments together, and suspending the bladder by sutures to the round and broad ligaments. It was their unfortunate experience to have some cases of postoperative fistula form at the site of one or other of the bladder stitches. In one instance this resulted in an ureteral fistula. At the same time, they saw several patients operated elsewhere by vaginal hysterectomy, who suffered with a recurrence of cystocele and whose ultimate cure depended upon very delicate dissection and overlapping of the pelvic fascia in the anterior vaginal wall. Despite these dangers, they had followed quite a large series of patients operated upon by the Jellett or the Goffe procedure who had had no recurrence for over a period of seven years.

In April, 1917, J. Craig Neel (*California State Journal of Medicine*, vol. xv, p. 121) presented before the meeting of the California State Society a method of dissecting the fascial layer in the anterior vaginal wall, and of overlapping this fascia according to the method presented independently a year ago to this society by Rawls.

During the past two years he had utilized this procedure for the cure of cystocele with excellent results, and recently had combined it with amputation for the cervix and subtotal vaginal hysterectomy for the cure of prolapse of the uterus with cystocele and rectocele. This technic was more effective and less dangerous than total hysterectomy. It preserved the invaluable paracervical fascia and ligaments and avoided the dangers of hemorrhage, sloughing and fistula formation.

So far, the patients operated according to this techinc had had no serious complications. Bleeding at the time of operation had been slight and there had been no infections or hematoma formations. Not infrequently, however, there had been difficulty in voiding for from ten to fourteen days. On discharge, the cervix had been found high posteriorly, with the bladder and rectum well supported. Sufficient time had not elapsed to express a positive opinion, but from present indications, the preservation of the cervix and the paracervical tissue, supported by the broad and round ligaments with the overlapping of the fascial layers, gave promise of value for the cure of those patients suffering with prolapse and cystocele in whom the sacrifice of the uterine body was not contraindicated.

DISCUSSION.

Dr. Thomas J. Watkins, of Chicago, pointed out that the sacrouterine ligaments varied very much in different individuals in the amount of tissue present. The operations involving the uterosacral ligaments were disappointing, whether one attacked them from below or above. It was useless to double them upon themselves by sero-serous approximation because they were almost certain to stretch out. Whether they were much stretched or not, there was often so little tissue that one had to suture very loosely. One was surprised at the amount of connective tissue found in the vesicovaginal septum. In doing prolapse operations he was very much impressed when he was operating upon a cystocele, after separating the bladder freely in the sac of a vesical hernia, with the amount of connective tissue encountered, and he was especially impressed with this if he inserted a sound into the bladder after the separation of the bladder from the hernial sac and in this way more accurately determined the location of the bladder and the thickness of the tissue.

In the transposition operation one important point was the question of using sufficient ligatures and replacing the cervix upward and backward. There were three things one could do which would very materially increase this and add much to the efficiency of the operation. One was to amputate the cervix, if there was an elongated cervix, that could not be sufficiently displaced backward; the second was to make a broad separation from one side to the other, so that there was no tissue holding down the cervix. The third was to be very careful to separate all the intraperitoneal adhesions so that the uterus would readily come down, and the more readily the body of the uterus came down, the more readily would the cervix be displaced upward and backward.

DR. DOUGAL BISSELL, of New York City, was glad to find the essayist advocating the principles of fascial lapping in the surgical treatment of procidentia uteri, and he hoped that he would become convinced that this principle alone was sufficient. He had given fair trial to most of the recognized operations for prolapse of the female genitals, and had met with success and failure in each and in all of them. He had striven to determine the essential feature or features on which success was dependent, the cause of failure and the elements of technic had no bearing on results.

Believing at one time in the interposition principle *per se* as the essential element in success, but recognizing definite objections, the speaker devised and put into practice from February 15, 1912, the operation for interposing the united round and broad ligaments described several years later by Mayo, and now associated with his name. The speaker's experience with this procedure covered several years. The first case remained a cure up to the time of her death three years after operation. Successes and failures followed. The failures caused him to modify his technic by calling into service the uterosacral ligaments, passing them through the base of the broad ligaments and tying them over the approximated tissue of the vaginal vault. Even with the addition of this feature his success was not uniform. He then resorted to the Simpson technic of subtotal vaginal hysterectomy and interposition, thinking that the reason for failure might have been due to the approximated ligaments not uniting. Again, his results were not uniformly satisfactory.

He eventually became convinced that none of the special features upon which emphasis was laid in the several methods referred to were essential, and that success when attained was the result of a proper fascial readjustment alone.

Dr. Rawls and the speaker were in accord regarding the principles of fascial lapping; they differed only in the manner of preparing and anchoring the fascia. Rawls preferred the usual vertical incision through the middle of the anterior vaginal wall as his initial incision, while the speaker preferred the transverse immediately above the cervix, incising the fascia and covering the vesicofascial space a little to the right of the median line, as it was in this area that the connection was less intimate than at any other point between the bladder and fascia. Once the cellular space behind the fascia was entered, the fascial incision was completed transversely; the bladder was then freed from the under surface of the fascia along the anterior wall from below up and the anterior wall incised in its middle as the bladder was separated. The bladder was then separated from its lateral attachments and from its attachment to the cervix.

The next variance in technic was that he did not separate by dissection of any of the fascia from the mucosa in preparing the flaps, but denuded the mucosa from the flap preferably to the left of the operator. In so doing he avoided injury to the blood-vessels embedded in the fascial layers and maintained absolutely the continuity of the tissue. The opposite overlapping flap was not denuded of its mucous membrane. The extent of trimming was identical. Rawls' method of anchoring the flaps was more elaborate than his. The speaker contended that the underlying flap, when anchored to the opposite side, was sufficient to maintain the bladder in proper position.

Fascial lapping, when properly done, was alone sufficient to cure all forms of vaginal prolapse. When the uterus was diseased or no longer functioning, it should be removed; when removed the approximation of the tissues at the base of the broad ligaments, where the vesicovaginal and rectovaginal fascia were apposed to surround the cervix, was the only additional feature to fascial lapping necessary. The round ligaments were in no way essential to the support of the uterus; they acted only at intervals to limit the excursions of the fundus and helped to restore the corpus to its anteverted position. They were no more a part of the support of the uterus or of the vaginal vault when anchored to the cervical stump than were the ropes which prevented the ship from leaving its moorings. The real support of the ship was the water by which it was surrounded; the real support of the cervix was the fascial tissue surrounding it.

DR. J. WESLEY BOVEE, of Washington, D. C., said he was glad to see an acknowledgment of the necessity of the cervix being held upward and backward. In his judgment, there were but two structures which tended to hold the cervix upward and backward, one the utero-sacral ligaments in displacements forward of the attachment and the ligaments to the lower pole of the long axis of the uterus. The uterosacral ligaments might be pulled by the operation beyond the broad ligaments and were not touched anteriorly in these cases of prolapse. This was a mistake. It overlooked the probability of a weakening of the uterosacral ligaments in women with prolapse. They were usually women who had borne several children. The uterosacral ligaments were frayed out or broken abruptly in some places, which abrupt breaking was an inch or so back from the cervix, and this could only be remedied by an abdominal operation which repaired the uterosacral ligaments as one would repair a broken bone. Therefore, these operations were destined to be failures if such procedures on the uterosacral ligaments through the vagina were adopted. The uterosacral ligaments were oftentimes disappointing; they were much frayed out; there was very little tissue there. He disagreed with Dr. Watkins when he said that if they were doubled up or trebled they would not be secure. It was a question of technic in the manner of doing it. The triplication of the mass from fraying out of the uterosacral ligaments was an operation that very commonly succeeded in securing very efficient uterosacral ligaments. It required in many cases going above the promontory of the sacrum and gathering in quite a bunch of the peritoneum, and possibly periosteum of the sacrum, in order to get a firm attachment posteriorly; then if their triplicated arms were sutured together we got an efficient uterosacral ligament that would hold the cervix backward and upward. The vaginal route was unsatisfactory. He thought all these prolapse operations would be unsatisfactory unless one could hold the cervix back in the hollow of the sacrum.

Another feature was the anterior vaginal wall. He was pleased to hear Dr. Spalding say that the anterior vaginal wall was lengthened. In the old text-books, for instance, Byford's work published in 1883, it was stated that the anterior vaginal wall must be not less than 2¼ inches in length. Even in some cases one saw the necessity and acted accordingly of lengthening the anterior vaginal wall or lessening its leverage on the lower pole by the long axis of the uterus, in this way reaching nearer success.

Dr. Charles P. Noble, of Radnor, Pennsylvania, called the attention of active workers to the general surgical principle, that we should not add more traumatism; that we should not do more destruction than was essential to accomplish results. The tendency in the last ten years had been to destroy rather than to conserve in hernia operations, whereas the ideal was to restore the patient to her proper anatomy conditions. This referred to hysterectomies, interpositions, and so on, as a routine. His experience was with a group of patients which one could not satisfactorily cure with the technic which was in use ten years ago. The cases he had to deal with were those in which there was a deepening of Douglas' pouch, a great thinning out and overstretching of the uterosacral ligaments and detachment of the posterior vaginal wall from the rectum down to or near the anus. This was a group of cases the older technic did not meet, and there was 4 or 5 per cent. of relative failures in his work in this class of cases. But excepting that one single group, with the technic in use ten years ago, if carried out, one would cure 98 per cent. of them.

In this discussion he said it was interesting to him to notice that the overlapping of fascia had finally reached the vagina. Fifteen years ago he advocated this as a universal surgical principle for not only the cure but also for the prevention of hernia, and now it was interesting to see its application to the vagina.

Dr. Reginald M. Rawls, of New York City, pointed out that most of his work has been on the living subject, and the more of these cases he operated on, the more convinced he was that there was in the great majority of cases an exceedingly thick fascia-like substance between the anterior wall and the bladder. The anatomy had been confused by a multiplicity of terms and the same structures were called by different names. The description given by Piersoll and by Cunningham cleared it up better than he had seen described elsewhere. For instance, Piersoll warned us to distinguish between the arcus tendineus pelvic fascia and the white line dividing it, so that the pelvic fascia, in sending off its superior layer to the pelvic diaphragm, divided and sent a layer over to the bladder and there was a thickening of the arcus tendineus; whereas the white line took its origin from a reflection of the obturator fascia as it divided and came off of the internal obturator. The arcus tendineus was further forward. Operations were described for fixing the white line. In his opinion we could not reach the white line by dissecting through the anterior wall. Therefore, as his experience had been unsuccessful, in a few cases he had resorted to the old method of colporrhaphy and had been trying to devise some method by which he could operate on a woman in the child-bearing period and not use the interposition operation. It seemed to him that the overlapping of this structure would give a permanent result. He had not been able to follow his cases long enough to give a definite résumé of the results, but the one fault, if he might say so, in Dr. Spalding's technic was in making the section of the anterior wall. The speaker had found by introducing scissors and separating them one could destroy a portion of that fascia. When one had to cut down directly to the bladder he always got the line of cleavage.

The most difficult cases in which to demonstrate the fascia were young women who had only borne one or more children, and in whom there was cystocele with slight descensus. In women with marked prolapse one would find very well-developed tissue.

A UNIQUE DIFFUSE UTERINE TUMOR, REALLY AN ADENOMYOMA WITH STROMA BUT NO GLANDS; MENSTRUATION AFTER COMPLETE HYSTERECTOMY, DUE TO UTERINE MUCOSA IN REMAINING OVARY.

Dr. De Witt B. Casler, of Baltimore, Maryland, in describing this case said that a panhysterectomy and a right salpingoöophorectomy were done for a supposed myoma of the uterus in a patient thirty-nine years of age, following a metrorrhagia of one year. The gross specimen was found to have a large reddish polyp filling the cavity, while the walls of the uterus had a peculiar appearance, small comedo-like masses standing out prominently above the cut surface on pressure. Sections showed an almost total absence of uterine gland but finger-like masses of interglandular stroma dividing the uterine muscle into a fine meshwork, were seen extending as far as the peritoneal surface. Following this, was a history of regular menstruation lasting one day each month for four years, when at the second operation, a cystic tumor of the left ovary was removed. This was found to contain many reddish polypi resembling in appearance the uterine specimen previously removed and to be made up almost entirely of uterine tissue, glands, stroma and normal appearing uterine mucous membrane.

DISCUSSION.

Dr. Charles C. Norris, of Philadelphia, reported the case of a woman who came to him suffering from a mild inflammation. One tube and one ovary had been removed and the specimen showed nothing microscopically but salpingitis and pyelonephritis. The ovary was a little enlarged and contained a follicular cyst. Microscopic examination proved that the ovary contained a moderately large amount of endometrium, about 6 or 7 millimeters in diameter. The endometrium had no outlet on the surface of the ovary; it was surrounded by small fistulous spaces. He then reviewed the case and found one of the chief symptoms was dysmenorrhea. Curiously enough, the pain was on the side with the remaining ovary. This might be readily accounted for by the salpingitis which was present. A curettage was done at the same time, and it was found the endometrium from the uterus coincided in type with that in the ovary.

THE HAIRPIN AS A FOREIGN BODY IN THE FEMALE BLADDER, WITH THE HISTORY OF AN UNUSUAL CASE.

Dr. Walter P. Manton, of Detroit, Michigan, read a paper on this subject.

(For original article see page 262.)

A STUDY OF BLADDER FUNCTION.

Dr. Arthur H. Curtis, of Chicago, Illinois, read a paper with this title, in which he stated that in 1917 Besley strongly urged noncatheterization of the bladder in cases with injury to the spinal cord, and asserted that he had never seen cystitis in a patient suffering from cord injury, unless that patient had been catheterized. He stated, further, that he had never found evidence of disturbed kidney function as a result of allowing bladder to become distended and overflow.

This expression of opinion, by one whose judgment was to be greatly respected, ran entirely counter to the author's experience. Whether we should leave an ill-functioning bladder to right itself, or should assist nature through the use of a catheter, was a problem of much importance; it concerned not only the bladder of the soldier with spinal injury, but also many other conditions, notable among which was stasis of urine after operation.

In military service he made repeated attempts to test Besley's plan, but some one unaware of his wishes always passed a catheter sooner or later. Recently, in an experimental study of this subject rabbits had been used. These laboratory animals were, in some respects, more satisfactory than human patients, particularly because they could be sacrificed at any desired time to determine just what changes had taken place.

The bladders of twenty-two male rabbits were paralyzed by cutting the spinal cord. This injury produced a bladder paralysis entirely analogous to that which occurred in soldiers consequent on gunshot injuries of the spine and cord.

The animals were housed in sanitary cages which permitted immediate drainage of voided urine. The buttocks and genitalia were kept clean through shaving, aided by bathing and application of petrolatum many times daily. A study of the results showed that bladder paralysis was obtained in every case; to secure this a second operation was required in three instances.

Vesical distention was present in all except one rabbit which died three days after operation. The degree of distention was moderate in eight; in the other thirteen cases the bladder filled the entire lower abdominal cavity. One rabbit, without anatomical obstruction to urinary outflow, died in consequence of spontaneous rupture of the bladder. Extensive vesical erosions or ulceration occurred in nine instances. Hemorrhages in the submucosa were frequent.

The ureters of four were not distended and those of three were doubtful, whereas fifteen were unquestionably dilated, some to an extreme degree. Of the dilated ureters, both were involved eight times, the left alone five times, the right alone two times.

The kidneys were of much interest. Of the twenty-two cases, seven were normal and fifteen pathological. The microscope revealed that seven had nephritis, and six showed notable round-cell infiltration. Intense congestion, with more or less hemorrhage, was frequent.

Nine presented marked dilatation of the tubules, with which was often associated (in six cases) an extensive destruction of kidney substance. Despite the absence of anatomical obstruction to the outflow, the ureters dilated, the kidney pelvis distended, and the kidney swelled. The cut surface of such kidneys was streaked with coarse gray lines. Microscopically these gray lines proved to be veritable windows of parenchymatous destruction, characterized by atrophy and vacuolation of cells. The specimens which revealed this destruction were all from animals with considerable ureteral dilatation. These lesions were so intense as to greatly impress him with the serious damage which resulted from even temporary pressure upon the delicate kidney parenchyma.

A study of the effects of noncatheterization of the paralyzed bladder had been made in the case of twenty-two male rabbits. Extreme distention occurred thirteen times, with spontaneous rupture of the bladder in one instance. Nine showed extensive vesical erosions or ulceration. Back pressure with ureteral and kidney pelvis dilatation was usually present; in six cases this caused wide paths of almost complete destruction of kidney tissue. Bacterial invasion of the urinary tract was demonstrable in ten of the twenty-two animals operated upon.

These experiments upon rabbits indicated that the unrelieved distended bladder offered a twofold menace to health; first, through frequent infection of the urinary tract due to contamination of stagnant urine; second, through back pressure which distended the ureters, seriously interfered with kidney function and damaged the kidney tissue. It would appear advisable, therefore, to maintain the bladder in a state of freedom from residual urine, thus minimizing the danger of kidney involvement.

As for postoperative bladder function, observation of surgical cases in military service had convinced him that postoperative retention in men was quite infrequent as compared with women. Given an equal number of cases of retention in men and in women, it was further probable that the latter developed a higher percentage of infections. Except in instances of bladder paralysis or obstructed outflow, the problem of vesical retention was therefore chiefly concerned with the female sex.

One year ago he reported a study of the female bladder during convalescence after 465 consecutive abdominal and vaginal operations. It was found that especial watchfulness of the bladder was necessary after complete hysterectomy and during convalescence from prolapse operation. Paresis of the bladder for about one week frequently followed these operations, probably due to partial destruction of the interior vesical plexus.

Catheterization of these 465 patients was performed in approximately 35 per cent. of the abdominal cases, in 25 per cent. of the vaginal cases, and in nearly 50 per cent. of cases operated both abdominally and vaginally.

Dr. Curtis presented the following conclusions:

1. Failure to catheterize the paralyzed bladder is followed (in rabbits at least) by back pressure of urine which is exceedingly destructive to kidney tissue. Associated urinary tract infection is frequent.

2. Irregularly performed catheterization for retention of urine is unsatisfactory. Patients so treated are subjected to such dangers as accompany passage of the catheter and, at the same time, are rendered liable to accumulations of infected stagnant urine.

3. Carefully managed catheterization of the bladder, which fails to empty spontaneously, yields excellent results; the catheter should be regularly passed often enough to prevent vesical distention, and its use must be persisted in until daily tests show that residual urine is no longer present.

DISCUSSION.

Dr. Thomas J. Watkins, of Chicago, spoke of the urine becoming infected where there was an increased amount of residual urine.

The catheterized sterile specimens taken in a very large percentage of gynecological cases showed a growth in a considerable number of them, so that if there was an increased amount of residual urine in a case in which there was already bacteria present, it was easy to appreciate that a cystitis might readily develop. Whenever there was infection, it was known that the bacteria could be very frequently eliminated by the kidneys. These bacteria eliminated by the kidney in a normal bladder did not disturb the bladder, but in the presence of a diseased or traumatized bladder, we undoubtedly got many of our infections from that source.

Dr. Victor D. Lespinasse, of Chicago, spoke of the type of bladder encountered in war-producing injuries. These bladders should not be catheterized, but we should allow them to become automatic. It took two or three days for this to be established, and then urination could be induced by external stimulus somewhere around the testicles or stroking the thighs which would elicit a reflex. The changes that occurred in the bladder from diseases, like tabes and spinal cord tumors, where there was a cutting off of the nerve impulse to the bladder more or less, presented a very characteristic bladder picture, and it was a condition that many urologists were recognizing and diagnosing in a way and sending them to the nerve men for confirmation. The dilatation of the ureter was probably due as much to the loss of the nerve influences as it was to the back pressure. Any hollow organ, whose nerve supply was cut off, would dilate to a certain extent, and when there was dilatation with stasis and bacteria coming from the kidney there was bound to be infection.

Dr. Curtis, in closing the discussion, believed it was safer not to pass a catheter at all than to pass it very frequently in postoperative cases. He expressed his belief in catheterizing often enough to prevent distention of the bladder, which was every six or eight hours.

Dr. J. Whitridge Williams, of Baltimore, Maryland, presented a

DEMONSTRATION OF AN EARLY HUMAN OVUM IN SITU IN THE ACT OF ABORTING.

(For original article see page 269.)

DISCUSSION.

Dr. J. M. Slemons, of New Haven, Connecticut, said the question of abortion had been particularly pertinent recently on account of the epidemic of influenza which commonly caused abortion when women in the early months were affected by this disease, so that it had a practised interest. The speaker asked Dr. Williams if there was any way of knowing whether the decidual lesion or the death of the embryo was primary. He would also like to ask whether in this study Dr. Williams derived any ideas relative to the cause of hydatidiform mole.

Dr. Williams said he could not answer Dr. Slemons' question. He could not commit himself because he did not know how to do so. It was assumed that the underlying cause for the abortion was a defect in the ovum, but how it was that one ovum would be extruded early and another one late was a conundrum he could not answer. The other question he could not attempt to answer at this time because a study of the specimens did not permit of a positive opinion.

Dr. Arthur H. Morse, of New Haven, Connecticut, read a paper on

PREMATURE SEPARATION OF THE NORMALLY IMPLANTED PLACENTA.

(For original article see page 283.)

Dr. J. Morris Slemons, of New Haven, Connecticut, read a paper entitled

THE NUTRITION OF THE FETUS.

(For original article see page 194, August issue.)

These two papers were discussed jointly.

DISCUSSION.

Dr. J. Whitridge Williams, of Baltimore, Maryland, said there was no doubt that experimentally one could produce lesions in the uterus in animals which were in great part identical with those observed in the uteri of women who had had permature separation of the normally implanted placenta. The microscopic pictures were identical. The same thing could be done by tying off the blood-vessels and by torsion. All knew about the twisted pedicle in ovarian tumors and in other tumors of the uterus. These facts were clear, but whether we were justified in drawing the conclusion that that was the mechanism by which premature separation of the normally implanted placenta occurred, he was not so clear about. We frequently saw torsion of the uterus. Seventy per cent. of women had more or less torsion. In a few women, whose abdomens were opened in the presence of normally implanted placenta, there was no torsion; the uterus was found to lie in the median line, still there was absolute disintegration of the muscular fibers. It was not known at present what was the exact cause of any pathological condition which was responsible for this condition. The experiments made upon a rabbit's uterus and conclusions drawn therefrom were always open to suspicion because a rabbit's uterus was a very different thing from the uterus of a woman. When one opened a rabbit's uterus and looked at the membranes, he would naturally suppose from what he knew of the human placenta and its membranes, the membranous tissue that one saw outside was the chorion, and inside the amnion, as in the human, but it was no such thing. The membrane on the outside was the half inverted yoke of sac and inside of that was the amnion, and around the great bulk of the rabbit's ovum one did not get any chorion at all. In the second place, when one studied the placenta of a rabbit there was a very interesting change, namely, the rabbit's placenta was not implanted as was the human placenta. The human placenta burrowed down in the inside; in the rabbit it was attached to the surface. A second difference was in the rabbit's uterus. A rabbit had a litter of eight or ten. A rabbit's uterus was so arranged that it prepared for a new pregnancy while the present pregnancy was going on. In a rabbit, the placenta, instead of being implanted on the uterine wall throughout the entire duration of pregnancy, became pedunculated, and the vessels went into the peduncle and spread. When the placenta separated a wound was left on the peduncle which shriveled up, while the rest of the uterine wall was restored to its normal integrity.

Dr. Joseph B. De Lee, of Chicago, believed that the majority of cases of abruptio placentæ were due either to toxemia or were of infectious origin. Since reading Dr. Morse's theory of torsion of the uterus he had had two recent cases of attachment of the placenta and investigated both of them with a view to discovering torsion. There was torsion in neither case. In both, however, there was infection. One patient was seen during the epidemic of influenza, and while the mother remained free from disease the child presented at autopsy perfect findings of influenza. The fact that most of these cases had an acute hemorrhagic diathesis led one to think there was a toxic or infectious basis for them similar to what Dr. Williams had suggested.

Dr. John O. Polak, of Brooklyn, New York, reported two cases, in one of which there was the most marked torsion of the uterus that he had ever seen. The patient was a primipara. The left ovary and tube and round ligament could be palpated to the right of the median line. This woman, with cervix dilated to 5 cm., with symptoms of abruptio placentæ and by rupture of the membranes, took care of herself.

The other woman was seen in the service of Dr. Beach. Following the usual treatment of abruptio placentæ and rupture of the uterus, the woman did not take care of herself, and with the uterus expanding, the blood pressure increasing, and the hemoglobin rapidly decreasing, abdominal section was made. This case showed torsion, thrombosis of the veins and presented the typical picture described by Dr. Williams and repeated by Dr. Morse in his histologic studies.

Dr. Morse, in closing the discussion on his part, thought the ideal thing to do, and if he could have done it it would have been done, would be to repeat these experiments upon monkeys because the uterus of the monkey was nearer human than the uterus of the rabbit, but this he was unable to do because it was not possible to get pregnant monkeys.

Dr. Slemons, in closing, stated with reference to the paper of Dr.

Morse, that failing to find the uterus had rotated at the time of operation did not prove it was not rotated out of its normal position previously. In the next place, Dr. Morse had not attempted to prove that torsion of the uterus was always responsible for premature separation of the placenta. His thesis was that it was an acute blocking in the circulation, and he had employed torsion as the most feasible experimental way of blocking vessels. It seemed as if blocking of the circulation afforded the most satisfactory explanation.

THE PELVIC ARTICULATIONS DURING PREGNANCY, LABOR AND THE PUERPERIUM; AN X-RAY STUDY.

Dr. Frank W. Lynch, of San Francisco, California, said that the question as to whether a woman's pelvic girdle expanded in pregnancy and labor had been a matter of interest since earliest time. The belief that it did separate had had many advocates and had been confirmed by many positive reports by earlier observers. Quite likely the majority of these were pathological cases, yet there was no doubt that joint changes greatly aided labor in some of the animals.

As early as 1912 Le Gallois showed that the pelvis of the female guinea-pig was only about half the size of the fetal head, and that parturition was possible only by an increase in its size, since the head measured 20 mm. and the pelvis but 11 mm. He showed that three weeks before parturition the ligaments joining the pubis became thick, soft and malleable so that the pubes gradually opened, the ilia swinging on the relaxed uterosacral joints as if on a hinge. At the time of parturition, there was a separation of, at least, one finger's-breadth and very often two. Immediately after delivery, the shrinkage began and the symphysis in a few days receded to normal width and consistency.

Knox in 1839 observed in a pregnant seal a separation of the symphysis pubis and elongation of its ligaments to the extent of nearly 2 inches. Barlow in 1854 described changes in the pelvic joints of the parturient cow which increased the size of the pelvis, and Duncan later demonstrated these specimens before the Edinburgh Obstetrical Society. The pubes remained fairly well held together and the changes were chiefly in the sacroiliac joints. The sacroiliac joints in the nonpregnant animal were firmly bound by a substance resembling intervertebral discs, yet in pregnancy the bony surfaces became smooth and lubricated and the surrounding fibrous ligaments markedly relaxed. The sacrosciatic ligaments of moderate thickness and in a state of tension in the nonpregnant cow were much longer and thicker in the pregnant animal and with such lack of tension as to permit the sacrum to move quite freely upon the ilia, the *vice versa* in an anteroposterior direction and to allow the ilia to separate behind. The fact that the cow's rump changed its plane a few days before labor had long been known to cattle raisers.

It seemed quite likely that similar observations were responsible for the Hippocratic doctrine that a woman's pelvis separated in her first labor and remained so thereafter. The majority of texts stated that Vesalius did much to overthrow this doctrine by his dissections in which he demonstrated that it was impossible for the pelvis to so widen, as did Realdus Columbus who claimed that woman's pelvis was an unyielding ring. Yet we found from the literature that these observations made little impression for more than a century, possibly because Severin Pineau in 1599 described a separation in the pubis of a woman who suffered punishment by death ten days postpartum for the murder of her child. The dissection done in the presence of Ambrose Paré proved the plausibility of the older tenet to their complete satisfaction.

The weight of Paré's authority and the value of positive evidence prevailed. The majority believed that Vesalius and Columbus had dissected cases against the rule. It appeared that of the obstetricians of the 17th and first half of the 18th century, Mauriceau alone rejected the Hippocratic doctrine. The pelvis was so small, wrote Paré, how could a baby come through so small a space without the pelvis yielded?

Our modern belief was first well stated by Baudelocque, who admitted that the pelvis occasionally separated, as was evidenced by the reports of many positive cases, but denied that it did so as a rule, since he sought it unsuccessfully in the fresh bodies of 20 women who died following labor. Since considerable separation did not occur, as a rule, he deemed that a smaller one would not aid labor materially since a pubic separation of 1 inch added only two or three lines to the essential pelvic diameters.

Sufficient examples of pelvic separation had been reported to excite interest in its mechanism. The older observers usually regarded the symphysis pubes as a fibrocartilaginous joint very often without mention of binding ligaments and considered the accumulations of fluid in its center as degenerations. Yet Albinus when in Leyden classed both the symphysis pubis and sacroiliac joints as bone joints lined with synovial membrane. Wm. Hunter independently about the same time came to the same conclusion and showed that in parturient women a membrane often extended over nearly the entire articulation and contained fluid. One hundred years later, Senoir advanced similar views before the Paris Academy contending as did Hunter that an effusion of serum caused the separation of the bones and relaxation of the ligaments, and that the joints were lined with synovial membrane. Luschka in 1854 made similar observations recording the contrasting pictures of the pelvic joints of two women of twenty-one, one nonpregnant and the other recently delivered, as well as the report of the findings of a woman of thirty-six who died late in pregnancy.

Yet the whole subject of the behavior of the pelvic joints in pregnancy and labor was best summed up in Duncan's essay in 1867. He emphasized the error of teaching that the pelvis was immobile since the sacrum normally rotated within small limits on a transverse diameter. This nutation of the sacrum occurred in men and women. When standing the body weight pushed the promontory backward, thus increasing the length of the conjugate vera. When squatting the promontory was shoved forward and the coccyx backward, thus increasing the diameter of the outlet. With the softening of the pelvic joints which occurred normally during pregnancy, the movements of the sacrum were increased. Nature utilized them to aid labor and guided the woman in the first stage to walk about to increase the inlet while the head was high. When the presenting part reached the pelvic floor, the reflexes caused them to draw up their knees and press down. The contracting abdominal muscles pulled the pubis up and thus increased the outlet. Moreover, they pushed with their feet wide apart in a position to take advantage of any separation of the pubis. His dissertation clearly explained the value of the so-called Italian position which was in use for many centuries before described by Walcher.

The observations of Budin had been confirmed by hosts of observers and Cantin's observations were of interest in showing the amount of separation present in a series of 500 cases. He found an increased mobility over that of nonpregnant controls in all but 2 per cent. of cases. Yet the pubis was not separated more than 3 mm. in any of his series, and only in 16 per cent. was it more than 1 mm. Symptoms were present in 15 per cent. of the total, and 70 per cent. of those giving symptoms had changes in their gait. The recent work of Goldthwaite was known to all.

His study had developed from observations in an effort to use the *x*-ray for diagnostic aids in gynecology and obstetrics, as well as from interest in a case of rupture of the symphysis during labor which came under his care three years later with marked symptoms in her second pregnancy; and by the great number of sacroliac slips seen in his service in spite of proper correcting. Since he was not aware of a similar series of *x*-ray studies of pelvic articulations, he was presenting some of his cases. It was difficult to present conclusions because of the constant chance of error in deductions from the *x*-ray plate. Only one woman studied had had marked widening of the symphysis during pregnancy, with a return to normal limits when seen fifteen months later. It appeared, however, as if the widening of the sacrosciatic spaces occurred very frequently.

DISCUSSION.

DR. J. WHITRIDGE WILLIAMS, of Baltimore, said there was no doubt that in a certain proportion of cases there was definite enlargement of the symphysis pubis at the time of labor, and in a certain number of women he had *x*-rayed, he had found pictures quite identical with those of Dr. Lynch.

DR. JOHN O. POLAK, of Brooklyn, stated that there was no question that this separation or loosening of the joints occurred, but postpartum there were a very large number of backaches immediately after delivery, and it was this that started him to take up the investigation of the separation or loosening of the joints and his casual study with x-ray pictures in these cases of why backache was so prominent during the puerperium confirmed the pictures shown by Dr. Lynch, namely, there was some slipping of the sacroiliac joint, and since he had investigated this as a routine in those women where they complained of backache, he had relieved these backaches by posture and the patients had been made far more comfortable.

Dr. Joseph B. De Lee, of Chicago, had studied several thousand women with particular reference to the pubic joint, and he found in a considerable percentage of cases, between 5 and 8 per cent., depending on the class of patients, there was a tendency to relaxation of the pubic joint demonstrable by ordinary tests, without the x-ray, during the latter months of pregnancy. There were drawing sensations in the thigh and tenderness over the pubes which accompanied this softening and relaxation of the pelvic joints.

Dr. Jennings C. Litzenberg, of Minneapolis, called attention to a paper which he read before a section of the American Medical Association two years ago entitled "The Sacroiliac Joint in Obstetrics and Gynecology." In a study of 1000 cases he found ninety-six which needed treatment, and as this subject was one which had been very much neglected he had been quizzing many of these patients who were suffering from the sacroiliac joint because of the gameness of the pregnant woman to play the game to the finish without complaint, and he hoped the paper presented would emphasize the clinical fact that every pregnant woman should not only be asked whether she had backache, but should be studied for that purpose because these women would not complain of it, and it would save a great deal of invalidism if they were properly treated.

Dr. Lynch, in closing the discussion, said that given a woman with a border-line pelvis, he had for the last year or more, since this work had extended over three years, x-rayed her pelvis to see if he might take advantage of position, and since he had been using the method of an old Italian physician he had had the same results possibly because there was the little enlargement which one might obtain in a pelvis by such a position.

Dr. John Osborn Polak, of Brooklyn, New York, read a paper on the

VALUE OF REPEATED SMALL BLOOD TRANSFUSIONS IN BLOOD STREAM INFECTIONS.

(For original article see page 291.)

DISCUSSION.

Dr. Rudolph W. Holmes, of Chicago, pointed out that repeatedly he had had women who had come to him anemic from rather severe hemorrhage and developed sepsis. He had always been afraid to inject blood. No doubt transfusion would shorten the period of convalescence, but the patient would develop antibodies. There was no way of telling what influence the white cells would have on the symptoms; therefore, the patients might be made worse than before. Everything that was done in an attempt to minimize the dangers of sepsis was worthy of trial, but he was skeptical as to the value of blood transfusion; in fact, he was skeptical about any treatment, and if these patients were let alone they would be given the best chance for recovery.

DR. ARTHUR H. CURTIS, of Chicago, stated that seven or eight years ago Dr. Davis and he were interested in the subject of transfusion. They transfused hundreds of dogs and a fair number of human beings. There was no question whatever that after transfusion the patient developed leukocytes, not because leukocytes were introduced with the blood that was transfused, but as a result of the reaction which occurred in the patient.

DR. JOSEPH B. DE LEE, of Chicago, stated that in cases of sepsis postpartum or postabortum, attended with severe hemorrhage, or having been preceded by a severe hemorrhage, transfusion was of great value. In two cases in which such a condition existed he gave large doses of blood at three- and four-day intervals, and without question the addition of the new blood helped the woman to combat infection.

DR. THOMAS J. WATKINS, of Chicago, said he was very much impressed by the statistics as to mortality and morbidity of puerperal sepsis, for the reason that as we got them now they were of very little value, because, in the first place, the infections varied so greatly in individual cases, and second, because our treatment of puerperal infections had been so varied, and the old statistics of morbidity in the treatment of puerperal infection were rather more than the mortality of the disease. Since less traumatism was done and less surgery performed in these cases, there was very litte fear of death except in the virulent type of case so sick that there was little or no hope of recovery.

DR. POLAK, in closing the discussion, said he discriminated between sepsis where there were pathological conditions and where there were blood-stream lesions. In the eleven cases made the basis of blood-stream lesions, the streptococcus hemolyticus was found in each and every blood specimen. These were not the class of cases where the gynecologist was just "praying to God that they would get well." They would get well sometimes, but when the leukocytic resistance was down around 7000 or 8000 and the hemoglobin from 60 or 70 down to 30, it showed destruction of blood tissue, and it was in that class of cases in which repeated small transfusions were urged, not in the cases of large parametritis or local perimetritis, or local endometritis, severe as it might be, with a toxanemia where there was a bacteriemia, on which was a definitely different thing to a toxemia. He could absolutely leave these patients alone with fresh supportive treatment, and it was ideal in certain cases, but he had had a certain number of cases that he could not improve by that method. In this class he found that day after day the patient's temperature and pulse rising, the hemoglobin decreasing, and the leukocytes showing no reaction, and in these small repeated transfusions had given the good results claimed.

DR. REUBEN PETERSON, of Ann Arbor, Michigan, read a paper on

AGE DISTRIBUTION AND AGE INCIDENCE IN 500 CASES OF CARCINOMA OF THE UTERUS.

DR. PETERSON, stated that the incidence of carcinoma of the uterus was aroused by a recent case of this disease observed in the gynecological clinic of the University Hospital.

With a view of determining the age incidence of cancer of the uterus in a large series of cases, material was collected from the following sources:

1. Cases of uterine cancer from 1902–1918, gynecological clinic, University of Michigan Hospital	298
2. Cases of uterine cancer, 1902–1918, private clinic	55
3. Cases of uterine cancer from other sources, 1895–1918, pathological laboratory, University of Michigan	147
Total	500

These cases were not selected but were included in the list as they occurred chronologically up to 500 cases, a number large enough to allow of accurate conclusions being drawn.

Each of the 500 cases of uterine carcinoma had had the diagnosis confirmed microscopically in the University of Michigan Pathological Laboratory by its director, an acknowledged authority, whose final judgment could not be questioned.

Age distribution and age incidence in the 500 cases were considered under the following headings chosen for either anatomical or microscopical reasons:

1. Carcinoma of the uterus.
2. Carcinoma of the cervix.
3. Carcinoma of the fundus.
4. Squamous-cell carcinoma of the cervix.
5. Adenocarcinoma of the cervix.

After considering the various aspects of the subject, the author summarized his investigations as follows:

1. The maximum age distribution in 500 cases of cancer of the uterus is at the age period forty to forty-five.
2. Between the ages thirty-five and sixty-five occurs 82 per cent. of uterine cancer.
3. The young female is not immune to cancer since seven of 500 cases or 1.4 per cent. occurred between the ages of twenty and twenty-five.
4. Uterine carcinoma below the age of twenty is exceedingly rare but it does occur in an appreciable percentage of cases between twenty and twenty-five.
5. The cervix was the seat of the disease in six out of seven cases occurring between twenty and twenty-five.

6. Maximum number of cases of carcinoma of the cervix is to be found in age period forty to forty-five.

7. In the present series fundal carcinoma was found in an unusually large percentage of cases, ninety-four out of 500 or 18.8 per cent.

8. Maximum number of cases of adenocarcinoma of the fundus is to be found between fifty-five and sixty, fifteen years later than in squamous cell of the cervix, which is forty to forv-five.

9. Adenocarcinoma of the fundus is not a disease of early life, there being in the present series only three cases out of ninety-four below the age of thirty-five.

10. From the analysis of this series and from the statistics of other writers it is fair to assume that from 10 to 15 per cent. of uterine carcinoma is located in the fundus.

11. A large proportion of the 500 cases of uterine cancer was squamous-cell carcinoma of the cervix, 369 in all.

12. In contradistinction to carcinoma of the fundus, 23.5 per cent. of squamous-cell carcinoma of the cervix is found in patients under forty.

13. Practically 50 per cent. of the 369 cases of squamous-cell carcinoma of the cervix occurred between the ages of forty and fifty-five.

14. Adenocarcinoma of the cervix is much more rare than the two other forms, thirty-seven out of 500 cases.

15. The maximum number of cases occurs in age period forty to forty-five.

16. Between twenty and forty years of age there were 30 per cent. of the thirty-seven cases of adenocarcinoma of the cervix.

17. The age incidence of carcinoma of the uterus at different age periods is determined by the following:

$$\text{Ratio for age period } N = \frac{\text{percentage of carcinoma for age period } N}{\text{percentage of population for age period } N}.$$

18. The maximum age incidence for carcinoma of the uterus is at age period fifty-five to sixty; it declines rapidly from this age period to the period seventy to seventy-five.

19. The greatest age incidence for adenocarcinoma of the fundus is the same as that of cancer of the uterus as a whole, age period fifty-five to sixty.

20. The highest carcinoma incidence in carcinoma located in the cervix, in squamous-cell carcinoma of the cervix and in adenocarcinoma of the cervix is at age period fifty to fifty-five.

21. After each age period of greatest carcinoma incidence is reached there is a sharp decrease in incidence, demonstrating the incorrectness of the statement that the age incidence of carcinoma increases with the age period.

DISCUSSION.

Dr. John G. Clark, of Philadelphia, said that the age incidence of carcinoma rapidly decreased after 60. In other words, if one would let the human tree grow, very few carcinomatous branches were put out until a person reached the age of twenty; then in another four-year period it decreased until it was beyond thirty, and rapidly increased until the patient had passed forty-eight, particularly in carcinoma of the cervix. Then one would see it decline as rapidly as it extended. It was neither a disease of the young nor a disease of the decadent. With the gastroenterological series of cases the age incidence went straight up without any let up. It had impressed him very strongly whether this differentiaton between epitheliomata and the adenomatous type, the adenomas chiefly of the fundus, when farther up in age then the cervical type. It brought out clearly the point that an organ still functioning, as it advanced to old age, became increasingly affected with carcinoma, the uterus going out of function at the menopause, becoming an inert organ, and no longer functioning, was not particularly subject to cancer.

Dr. Hiram N. Vineberg, of New York City, said he had recently looked up the literature and found that carcinoma of the cervix in Jewish women particularly was exceedingly rare. Carcinoma of other parts of the body was not so rare. It was probably more frequent than it was among other races. The only explanation he could offer in these cases was that these women observed the Mosaic law. Under the hygienic code of sexual life, intercourse was not allowed until seven days after the cessation of menstruation; also several weeks were allowed to elapse after parturition before sexual intercourse was indulged in, namely, four to six weeks, and this would also bear out the fact that sexual irritation was likely a cause of carcinoma of the cervix.

Dr. Sidney A. Chalfant, of Pittsburgh, had seen one case of carcinoma of the cervix in a woman with complete prolapse of the uterus.

Dr. E. E. Montgomery, of Philadelphia, reported a case of prolapse of the uterus with carcinoma of the cervix. He had not seen any other cases like this.

Dr. Henry Schmitz, of Chicago, also reported a case of carcinoma of the cervix occurring in a woman with complete prolapse of the uterus.

Dr. Peterson, in closing the discussion, said he had had two cases of carcinoma of the cervix in which there was prolapse of the uterus. He agreed with Dr. Vineberg that carcinoma of the cervix in the Jewish race was very infrequent.

Dr. Harold C. Bailey, of New York City, read a paper on

FURTHER OBSERVATIONS ON THE RADIUM TREATMENT OF UTERINE CANCER.

(For original article see page 300.)

DISCUSSION.

Dr. Howard A. Kelly, of Baltimore, stated that he saw many cases of cancer in which the disease was so far advanced that he could hardly do anything for them. This was particularly true of cases of cancer of the uterus. He never radiated body cancers unless they were inoperable for other physical reasons. He had radiated where the patients had been too low or the disease too advanced for them to withstand operation. Those patients had had diabetes, tuberculosis, or some other serious trouble, and in those he had resorted to radiation. He had seen several cases apparently well after several years. Operation in an operable case was much more likely to give a permanent result; therefore, this class of cases was dropped out for the reason that the radiative treatment was intensive, and spraying the uterus did not amount to anything where there was a large amount of cancerous tissue present. In those cases of wide dissemination of cancer he agreed with Dr. Bailey that it was better to discourage the radium treatment. The same thing was done with cancer of the breast when the disease was disseminated through the chest. An injustice was done to the new method of treatment by using it in such cases.

As to dosage, not huge, but medium doses repeated were better than single treatments extending over a period of twenty-four hours. It was better to divide the dose and follow it up every two or three weeks, then wait a period, continue treatment again, and so on.

Dr. John G. Clark, of Philadelphia, agreed with Dr. Bailey that massive doses should not be used. In looking up Dr. Bailey's statistics as they stood, and the 207 cases which the speaker reported the other day before the American Radium Society, he was impressed with the similarity of results. There was no field that had come into the foreground of medicine and surgery where a similarity of viewpoints had so quickly came together. In other words, all realized the limitation of radium. All realized its enormous good if from no other standpoint than that of pure palliation.

In the cases he spoke of there was 48 per cent. of local disappearance of the disease. Some men had claimed they were getting 48 per cent. of permanent cures. In most of the 48 per cent. permanent cures the patients went on and died ultimately from extension of the disease or from metastases, but usually from extension of the disease.

Will the emanations or these massive doses go through other tissues? He was interested the other day in Dr. Samuels' paper in which he brought out the question of dosage. Dr. Samuels originally started with 150 milligrams and came down to 100 milligrams, while the speaker was using 100 milligrams and adhering to it strictly. He had now dropped to 50 milligrams and believed he was getting better results than with 100 milligrams.

Dr. Joseph Brettauer, of New York City, said he had never had more than 100 milligrams of radium at his disposal. He had never used it altogether. He had used it in 60 and 40 milligram doses, and had never attempted to cure a woman with carcinoma of the uterus by radium alone. He had never advised a woman whom he considered to come within the sphere of operative cure to be radiumized or treated by radium before operation. His results had been about the same as others. He had had some most wonderful palliative results in women who had come in bleeding, suffering from sleeplessness, foul discharge, cachectic, having lost from 25 to 50 pounds in weight. In six weeks, after two or three applications of radium, one would hardly recognize them. The pains and bleeding had stopped. If bimanual examination showed no more ulceration but a tightly fixed organ, it was time to stop radium temporarily, and he had had most gratifying palliative results with radium.

Dr. John O. Polak, of Brooklyn, asked Dr. Bailey as to the dosage to be used preoperatively, and when was the best time after that radiation to operate on operable cases.

Dr. Thomas J. Watkins, of Chicago, asked Dr. Bailey whether 2000 milligram hours of radium given during four hours was any advantage over 2000 milligram hours of radium given over 20 hours.

He made a plea for the hopeless cases of carcinoma. He believed it was a duty for us to render service to these people, and if there was any one class of patients that should have our services it was these people. It was highly important to do whatever we could for them as long as our motive was in the interest of the individual, and he believed that motive should supercede any fear of bringing discredit upon our remedy. Personally, he treated all of these hopeless cases, and with one exception, he had been able to cause the ulcer to heal; he had stopped hemorrhage and discharge; he had lessened the pain, and he had given great comfort to these patients and their friends.

Dr. Frank W. Lynch, of San Francisco, stated that he had been using radium for the last two or three years. He began with small doses of 50 milligrams, and had come to the point of just reversing the way of some of the other men, that is, he was now going up to large doses, such as 200 or 300 milligrams, because he had had no results other than palliative from the type of cases which he had treated. The cases to which he applied radiation were hopeless, yet by analyzing his results he found he was curing ulcer rather than healing cancer, because the problem in cancer of the cervix must be divided into two parts, one the ulcer, and the other the growth. In the majority of cases the symptoms came from the ulcer, namely, loss of blood. The woman might die of infection from the ulcer, or from dangers which had come from the ulcerous condition. He had given these patients a year of life betterment with the radium, but he had personally seen no results in treatment with small doses of radium, that is, 50 milligrams of the salt, from the cancer proper. These women went on and died from cancer; probably they had been greatly improved because their ulcers had been cleaned up.

Dr. Bailey, in closing the discussion, stated that he could not see the theoretical value of reducing the dosage. If Dr. Samuels kept reducing his dosage, he could not see how he could get any effect except on the surface. One could wipe out cancer of the skin by the surface applications of small doses or radium, as was done quite frequently.

In answering Dr. Polak's question about the preoperative treatment, he said the results of Wertheim led him to the conclusion that it was unwise to put these patients on considerable doses of radium before operation. He thought the proper preoperative dose was 4 millicurie hours, that is, 8000 milligram hours in the cervix, and next to the uterus, and the operator must remember that if he was going to have a case radiated afterward he must leave enough vaginal surface to get the radium apparatus into the patient. One could not radiate to any great extent through the rectum.

As to Dr. Watkins' question of the difference between 2000 milligram hours given in four hours and twenty hours, there was practically no difference from the standpoint of physics. There was a slight difference, but it was impractical. There was this difference as regards the radiation of the patient. A small amount of radium could be used to make a bomb apparatus of lead, holding 100 milligrams of radium and radiating the patient for an hour at a time, day after day, in the parametrium. He thought this would prove an efficacious method. However, he had not tried it. It was a suggestion.

Dr. Howard A. Kelly, of Baltimore, read a paper on

THE TREATMENT OF BLADDER TUMORS.

(For original article see page 328.)

DISCUSSION.

Dr. Hiram N. Vineberg, of New York City, confirmed what Dr. Kelly had said on the value of the endoscope in preference to the other methods. He had been using it for a number of years and found very often he could make a more accurate diagnosis with it than he could with the reflection cystoscope. With the headlight he could manipulate and see the bladder much more distinctly than he could with a reflected light.

Dr. Harold C. Bailey, of New York City, asked Dr. Kelly if the surgeon who applied the radium in the small bulb regularly was always the same man, and whether the gentleman who used radium in that form had had radium effects in his own person. It appeared to him that this was a very dangerous way of handling radium, and he thought it would result in marked effects on the operator himself.

Dr. Henry Schmitz, of Chicago, said that the value of Dr. Kelly's paper lay in the simplicity of the treatment and his use of this instrument, which had impressed him after having worked with the ordinary cystoscope and by the indirect method. Tumors of the bladder that were localized were very easily treated by radium, but when a bladder tumor was not localized and infiltration had taken place the case was in a hopeless condition.

Dr. Kelly, in closing the discussion, and in answering the question of Dr. Bailey, stated that in applying the same bulb containing radium, he placed it himself, and if it became tiresome, he left it to one of his assistants who would hold it in the same place, and who was capable of looking into the bladder and seeing that it had touched the right spot. If it should slip a few millimeters away one was treating the sound bladder rather than the diseased part.

As to personal effects from radium, he was careful to keep his fingers away from it. He had a wall of lead of certain thickness and so high, and the nurses put the apparatus together. Their fingers did not come within 8 or 10 inches of it. It was hard to get the nurses to realize it was important to hold the radium away from their bodies. Dr. Burnam had had some trouble with his fingers. The speaker did not hesitate to expose himself when he wanted to do experimental work.

Dr. William P. Graves, of Boston, Massachusetts, read a paper on

OVARIAN RESIDUE.

He stated that the presentation of any clinical report on ovarian organotherapy must be made somewhat apologetically and with due modesty as regards any claims of strict scientific accuracy, for the chances of error in observation, both on the part of the physician and the patient, were so great that even the most carefully compiled statistics were in many instances only a little better than expression of general impressions.

In order to avoid misleading conclusions, it was always necessary to keep in mind the ways by which one was liable to fall into error. Inasmuch as the symptoms and conditions for the relief of which ovarian substances was therapeutically indicated, were chiefly of a purely human character, animal experimentation was for the most part excluded. In the treatment of such subjective symptoms as the vasomotor disturbances of the menopause, or the ovarian asthenias, or the diverse manifestations of dysmenorrhea, one must rely in the tabulation of results on the patient's statements, which it must be admitted were frequently inaccurate. In treating the more objective irregularities of the menstrual flow, observations were somewhat more accurate, but here again the results of treatment were not subject to the inspection of the investigator, and the reported records in a given case must depend on the patient's personal statement, which was often vague.

Thus the clinical data appended to an article on organotherapy like this one, for example, savored decidedly of the patent medicine experiences detailed in the advertising columns of the daily papers and for this reason, quite justly perhaps, they had invited the criticism of those who were accustomed to more scientific methods of investigation.

Another serious handicap to one who was endeavoring to make a systematic test of ovarian substance was the difficulty encountered in securing reliable preparations. There were, to be sure, certain excellent products on the market, but in prescribing them at random it was impossible to guarantee that the patient would receive an article that was even in a passable state of preservation. It seemed to be little appreciated that all ovarian preparations, excepting possibly those in ampule form, deteriorated more or less rapidly, and it had been his experience that even the best dispensing pharmacists took few precautions to preserve them in a fresh state. The great diversity in the results observed in organotherapy, was undoubtedly largely due to this factor of ready decomposition of the material.

The difficulty in securing fresh material he had been able partially to avoid by the kindness of two wholesale drug manufacturers, who had furnished him with preparations so that it had been possible to dispense them free to patients. In this way not only was freshness of the product insured, but a greater regularity of treatment was attained, than would have been possible by prescribing such high priced drugs as the ovarian residue had come to be.

The term ovarian residue related to that part of the ovary which remained after ablation of the corpus luteum and had usually been discarded as valueless. He was led to make use of it as a therapeutic agent in the course of trying out various ovarian preparations. In his earliest experiments with ovarian therapy he had employed exclusively corpus luteum extracts, in accordance with the belief then generally prevalent that the active part of the internal secretion of the ovary was produced solely by the luteal cells. The results of this treatment were irregular and unsatisfactory, though an occasional case responded successfully. In the light of later experience there seemed to be no doubt that the ill-success of these earlier trials was due, in part at least, to ignorance of the rapid deterioration of luteal products. It was not to be wondered at that Dr. Burnam, who was able to secure abundant fresh corpus luteum material attained far more brilliant and constant results than was possible for those who were dependent for their supply on the unreliable stocks of dispensing druggists.

His next experiments were with a dried preparation of the whole ovary made by Armour and Company, and put up in capsule form by a prominent local drug firm. It was possible in this way to secure a uniform product in a reasonable state of preservation. Favorable results immediately appeared and with such constancy that the prescribing of ovarian extracts became an important feature in his gynecologic practice. The superiority of the whole ovary preparation over those of corpus luteum, he at first ascribed theoretically, as did others, to a separate internal secretion elaborated in some part of the general ovarian stroma. Undoubtedly, however, the great improvement in the results was in a measure dependent on the greater uniformity and freshness of the material which he was able to control. It was also probably true that preparations of the whole ovary retained their therapeutic value somewhat longer than did those of the corpus luteum alone.

In coöperation with Dr. Grant of the Parke, Davis Co., he next treated a series of about twenty cases, having menopause symptoms, with desiccated corpus luteum from pregnant cows. The treatment of these cases was almost universally unsuccessful, due chiefly to the production of active digestive disturbances which, in a few instances, were severe and protracted. Others notably, Burnam, had employed the corpus luteum of pregnancy with success, though it was admitted by all that digestive disturbances were sometimes encountered. The failure in his own series of cases could be explained by the probability that the two particular lots of capules which were sent under presumably favorable conditions, had become decomposed, and that the patients had been treated to a mild form of proteid poisoning. It further supported the statement that corpus luteum preparations rapidly decomposed, though this deterioration was to a certain extent delayed by the tablet form in which they were at the present day usually dispensed.

The ill-success of the experience with the corpus luteum alone, as compared with the excellent results from the whole ovary, naturally led to a trial of the ovarian residue. As he had stated at length in other articles, the use of ovarian residue as a therapeutic agent was not without a logical basis. There was good evidence that in the process of growth, at least, the theca luteal cells of the atretic follicles were important agents in the manufacture of the ovarian internal secretion. The theca luteal cells which became activated in the physiologic process of follicle atresia corresponded to the segregated cells of the interstitial gland found in certain animals and generally accepted as a source of internal secretion. Moreover, the theca luteal cells of follicle atresia were known to be analogous to the cells of Leydig which elaborated the active secretory principle in the testicle. If it be accepted that the luteal cells of the corpus luteum were entirely or even in part proliferated from the connective tissue cells of the theca interna, it was reasonable to conclude that an internal secretion was elaborated both by the atretic follicles and the corpora lutea, which was identical in that it had the same histologic source in both bodies. This theory would be confirmed if it could be shown that preparations of the ovarian residue produced clinical results identical with or similar to those produced by preparations of corpus luteum, and this confirmation seemed to have been established by the results appended to this paper.

By the kindness of Dr. Grant, ovarian residue material was acquired and dispensed free to patients, and careful notes were taken and observations made as accurately as possible with the limitations mentioned above.

The immediate impression received by the writer in noting the results of administering ovarian residue was that though similar in action to the corpus luteum and whole ovary, and applicable to the same kinds of cases, its effects were somewhat more definite, and more constantly reliable than those from either of the other two.

Though not proved by experimentation *in vitro*, it had seemed evident that the residue retained its chemical integrity longer than the other preparations, and indeed it was entirely possible that its superiority in therapeutic value might be due to its greater resistance to decomposition.

In employing ovarian residue an endeavor had been made to secure as far as possible the ovaries of pregnant animals on the ground that follicle atresia was more active during pregnancy.

The number of cases reported was less than could be desired. This was due to the fact that on account of the exigencies of the war, the material furnished could no longer be obtained so that the work was long interrupted.

In addition to the possible errors in a clinical report of this kind, it should be mentioned that there was in the ovarian residue a minute amount of corpus luteum substance, due to the fact that the corpora lutea was ablated by machinery, and that small fragment were sometimes left behind. The amount of luteal tissue was, however, so insignificant that it could have but little effect on the results of treatment.

The present report as it stood was incomplete without a full comparison with the results from other ovarian preparations. This work was being done and would serve as a basis for a later paper. It might be said here that the author has a series of cases treated with whole ovary which nearly paralleled those of the ovarian residue. The statistical results in these two series were so nearly alike that it was impossible to draw any absolute conclusions. The general impression, however, received in using the two forms of ovarian therapy was in favor of the residue. A shorter series of cases treated with corpus luteum revealed a comparatively higher percentage of failures than in the use of the other two forms.

It was at present justifiable to conclude.

1. That the ovarian secretion was not solely confined to the corpus luteum, a view which some still held.
2. That the secretion of the atretic follicles and the corpus luteum was a similar product being manufactured by analogous cells, namely, those proliferated from the internal theca.
3. That the ovarian residue preserved its chemical integrity longer than did those ovarian preparations which contained corpus luteum substance.
4. That under present conditions of preparation ovarian residue was in general superior in its clinical results to the commercial articles now on the market.

The brief case reports which the author gave were divided into three groups: first, those exhibiting the symptoms of the natural and artificial menopause; secondly, those treated for such menstrual disturbances as amenorrhea, oligomenorrhea, delayed menses and clotting; thirdly, those of essential dysmenorrhea.

The majority of the cases of the first group were treated for postoperative hot flushes. In only a few of the cases were the symptoms severe, and in many they were not a source of complaint, being elicited only after questioning the patient. Ovarian residue was administered, therefore, in many instances, chiefly for the purpose of testing its effects these characteristic vasomotor manifestations. For hot flushes ovarian residue, like the other ovarian preparations acted as a specific palliative rarely failing to give some relief. For those multiple neuro-secretory symptoms, such as dizziness, sleeplessness, headaches, muscular pains, buzzing in the ears, asthenia, etc., which are so common in the natural, though not in the artificial menopause, ovarian residue was helpful in many cases.

In the first group there were in all forty-one cases of which there was good evidence that the treatment exerted a definite beneficial action in thirty-two, or in 78 per cent.

In the second group of amenorrheas, etc., there were failures, especially in the long-standing cases of amenorrhea. In some instances of delayed menses and clotting the results were rather striking. Even in the amenorrhea cases in which the menstrual rhythm could not be reëstablished, the patients often mentioned the general tonic effect of the treatment. This was especially true where other pluriglandular disturbances were evident. The stimulating effect of the ovarian residue could sometimes be enhanced by the addition of thyroid, and the anterior lobe extracts.

The third group of essential dysmenorrheas was quite incomplete, due to the fact that he had only recently used the residue in the treatment of this important disorder. Most of the cases represented patients who had not been relieved of their menstrual symptoms by surgical measures. It would be seen that even in these the ovarian residue exhibited a distinct therapeutic value. He was now treating a considerable number of dysmenorrhea cases of the acute anteflexion type with the hope of avoiding operative interference, but sufficient time had not yet elapsed to warrant definite conclusions.

DISCUSSION.

Dr. Howard A. Kelly, of Baltimore, asked Dr. Graves how large a dose he gave.

Dr. Graves replied that the average dose was 5 grains three times a day.

For the menstrual cases he began ten days before the period.

Dr. Kelly stated that he began with the whole ovary and gave it up. Then he tried corpus luteum and got Hynson and Westcott, of Baltimore, to get the ovaries of pregnant animals from slaughter houses and dried them out with care and compressed them. He did not think any of the materials he had been using had been subjected to deterioration. The results had been variable. Some patients had done well, othere not so well. He thought latterly it was due to insufficient dosage and within the last two years he had doubled the dose. He thought Dr. Graves had given excellent reasons for recommending the further use of ovarian residue.

In a paper on

ELECTIVE CESAREAN SECTION,

Dr. Edward P. Davis, of Philadelphia, stated that in one class there might be no reasonable doubt as to the indication for elective Cesarean section. These were patients who had had several difficult labors terminated by the death of the children, occurring at various intervals of gestation and under varying circumstances. In each case spontaneous labor had been attempted with failure and a difficult and for the fetus, fatal delivery through the vagina. Spontaneous labor in these patients had occurred at varying intervals, so that the question of prolonged pregnancy had not always arisen. Undoubtedly some of the pregnancies had terminated prematurely.

Under these circumstances, the operator had the choice of three procedures: *First*, the placing of the mother upon restricted diet, with careful hygiene, with the hope that the fetus might become proportionate to the shape and size of the birth canal, and that successful spontaneous labor might result.

The *second* procedure would consist in the induction of labor at such a time as might seem most advantageous, but as previous spontaneous labors had occurred unsuccessfully at various periods of gestation this would indicate the uncertainty of inducing labor.

The *third* choice lay in promoting the nutrition of mother and child in the highest degree throughout pregnancy and at its termination, with or without the first signs of labor, performing elective section.

The advantages of this procedure were the vigorous condition of the child, an uninjured and unwearied mother, and the relief from uncertainty and delay which difficult and unsuccessful labor entailed.

If husband and wife elected sterilization under these circumstances, should the operator accede to their wish? This was a question difficult to answer, but we must concede to them the right to request such a procedure. On the other hand, if they had no living child, they must be urged to avoid sterilization until several children had been obtained by repeated section or some other method.

The phrase physiological incompetence for labor had been employed in discussing the indications for Cesarean section. We must believe that every condition in the human body had a definite physical cause, and that while macroscopically we might not be able to appreciate the conditions of the tissues which produced a given result, yet microscopically physiological incompetence for labor was the result of certain definite conditions existing in the tissues. These cases were usually seen in ill developed, badly nourished and neurotic primiparæ, some of whom were considerably beyond the usual age of primiparous women. In many of these cases, the shape, size and contour of the pelvis were normal, and the pelvis might even be larger than the average. Some of these patients gave a history of irregular and painful menstruation, some were overweight and showed symptoms of derangement in the functions of the glands of internal secretion.

The most characteristic phenomenon of these cases, after we took into account the evidences of malnutrition which developed during pregnancy, was the failure of the uterus to cause the child to descend and engage in the last weeks of gestation. Uterine contractions were so slight as to be unrecognizable. There was no effect to bring about the fitting of the fetus into the birth canal, and there was not a sign of the development of labor. In many of these patients a pathological condition of the uterine muscle or nervous supply was present. While there might be nothing in the condition which could be recognized by ordinary examination, the actual inspection of the severed uterine muscle might show a condition of fibrosis which was at the bottom of the difficulty. These patients had no definite fibroid tumor of the uterus, but the uterine muscle was studded with small fibrous tumors whose presence prevented the efficient contraction of the uterus and thus rendered impossible the development of normal labor. For these patients the induction of labor would be of little, if any, service. The deficient uterus would not act properly under external interference, nor could drugs alter the efficiency of the diseased muscle. Artificial delivery became inevitable and if the interests of the child were to be considered, elective section was the operation of choice.

In some cases of repeated unsuccessful labor, or where the mother had a number of living children and yet was in ill health during the greater part of the time with some uterine condition, both parents might elect delivery by section, followed by sterilization, the operation to be done in such a manner as to cure the uterine condition. In many cases it was best to retain the function of the ovaries and hence the operation consisted of elective delivery by section, followed by the removal of the body of the uterus and Fallopian tubes and the appendix. In one patient, so treated, menstruation had continued regularly, and without pain, from the uterine stump, the vaginal discharge being typical and normal.

In some primiparæ in whom labor did not develop, the pelvis being of average size, some abnormality connected with the fetus must be suspected. Here one must be careful to detect the presence of a hydrocephalic or monster child. If such be present, embryotomy would be indicated; but, in the absence of such evidence, disproportion or some abnormality connected with the child might be the cause of delay.

In a large, well developed primipara there were slight efforts at descent and engagement at the natural end of gestation. Labor failed to develop and after some time elective section was practised. When the uterus was opened, an unusually long umbilical cord was so coiled about the child that its descent and engagement could only have been possible by the separation of the placenta or the rupture of the cord. There were no abnormal sounds over the uterus and it was hard to say how this condition could have been diagnosticated before the uterus was opened.

It was evident that the obstetrician took great responsibility in advising elective Cesarean section. It was the practice of the writer, in all cases, where the lives of mother and child were not plainly endangered, to carefully avoid urging operation upon any patient. The results of various procedures for mother and child obtained in his own experience and also in large numbers of cases reported by others were stated to those responsible for the patient's care. They must elect and the most that the physician could do was to give the facts, offering his own choice and opinion only if such were requested.

In the performance of elective section, care must be taken to secure efficient drainage of the lochia. This, of course, was unnecessary where the body of the uterus was removed, but even then it was well to see that the cervical canal was sufficiently open to give exit to such fluid as might accumulate in the upper portion of the stump. Where hysterectomy was not done, some operators contented themselves with passing one or two fingers from above downward through the cervix when the uterus was emptied. Others passed a large sized dilator, while some dilated the cervix with the finger, packed the body of the uterus with iodoform gauze and brought the end of the gauze through the cervix into the vagina. In the experience of the writer, this was the safest and most efficient procedure. The presence of the gauze acted as a stimulus to uterine contraction. The cervix dilated sufficiently to give free exit to retained material and the removal of the gauze forty-eight to sixty hours after the operation had so far not been painful or dangerous.

Recovery from elective section was often more speedy and complete than after a fatiguing and tedious labor. Morbidity was no greater than after any other operation of equal importance.

DISCUSSION.

Dr. Joseph B. De Lee, of Chicago, stated that by placing the incision in the uterus in the cervix and lower part of the uterine segment, it was possible to reduce almost to nothing the danger of intestinal adhesions. When the incision was placed in the lower part it was also possible to eliminate the danger of rupture of the uterus in subsequent pregnancy and labor. In order to give a woman the test of labor safely and avoid the necessity of an elective Cesarean section, it was possible to let her go into labor and give her a good test without danger because the newer methods of operation enabled one to perform Cesarean section in women who had been in labor for many hours with just as great safety as in the elective operation. We would then eliminate a great number of Cesarean sections if we gave the women the test of labor and saved ourselves the doubt and recrimination of having done a Cesarean section when it might not have been necessary.

He would heartily recommend a trial of the newer methods, the cervical methods of Cesarean section, of which there were two, the transperitoneal and the purely extraperitoneal.

Dr. J. Whitridge Williams, of Baltimore, thought that in some respects the paper of Dr. Davis would do more harm than good. What was wanted at the present time was to teach the ordinary doctor that Cesarean section was being opposed rather than giving an indication for extending its use. There was no doubt that in the first class of cases mentioned by the essayist, namely, women who had demonstrated by past experience their inability to have a child properly, the elective operation was often indicated. In a woman with prolonged pregnancy he thought there was sometimes indications for the operation, although in most cases the so-called examples of prolonged pregnancy were not such.

He had tried extraperitoneal Cesarean section and his experience had not been satisfactory. In view of the good results of the conservative operation, he had not attempted to try the transperitoneal one by dissecting back the bladder, but he thought that we ought to face as a responsible society the fact that Cesarean sections were being done throughout the community on the flimsiest sort of indcations, and he had in his own service regarded the matter of Cesarean section from an extremely conservative point of view.

Dr. Alfred B. Spalding, of San Francisco, referred to the Cesarean section scar. He spoke of a series of 175 cases, and it was a surprise to him to find as much as 6 per cent. of the patients had spontaneous rupture through the Cesarean section scar. This series of cases comprised the patients of a large number of operators. In studying the Cesarean section scar, he found in his own cases and in the literature as much as 15 per cent. of defective scars, studying and resecting the scars subsequent to Cesarean section. He believed practitioners were too conservative in reporting morbidity after elective Cesarean section.

Dr. Rudolph W. Holmes, of Chicago, said that he did not believe it was wise to do Cesarean section except in cases of gross disproportion or some emergency, or until the woman had been given a test of labor up to the point of rupture of the membrane. Slight deviations as the head lay high before labor would interfere with its descent, but we should not wait until labor begins to see whether it might come down. Sometimes it did. The mere fact that there was a little deviation was not an indication for Cesarean section.

Dr. John O. Polak, of Brooklyn, said it had been his privilege to do a secondary operation on fifteen cases that previously had undergone the classic operation of Cesarean section. Three of these fifteen had been operated on in his own clinic and had had what he considered a normal convalescence. The maximum temperature after the first forty-eight hours was not over 100.4°. Of these cases, thirteen had adhesions, five of them had a loop of intestine attached to the scar, and all those cases operated on during labor were brought into the hospital for observation during labor so that they could have the test of labor, and four cases showed a marked thinning of the scar, and two had practically a rupture through the scar. Personally, he felt that in all cases labor should be given a chance, and it was much better and much easier to operate after labor had been established, and if we waited for this we would not need a gauze pack in the uterus for forty-eight or sixty hours because the uterus would drain itself and we would be rid of the difficulty of retraction.

Dr. Davis, in closing the discussion, pointed out that the American Gynecological Society was not a society of general practitioners but of experts in obstetrics and gynecology, and it was the business of its members to find out scientific facts, and if certain things should be done by experts, they should do them. If they should not be done by experts, they should not do them. Operations for complicated labor were not for the general practitioner, but for the obstetrician. Prolonged labor of itself was not an indication for Cesarean section, but where a woman had had a prolonged labor with a history of previous disastrous labors and wanted to avoid that disastrous history, and yet secure a living child, the question of elective Cesarean section in a multiparous woman should be considered.

(To be Continued in the Next Number.)

RECORD OF CURRENT LITERATURE IN OBSTETRICS, GYNECOLOGY AND ALLIED SUBJECTS.

Titles marked * are abstracted in the current issue.

A. OBSTETRICS.

*Abdominal Pregnancy Continuing Four Months after Uterine Perforation. I. E. Bishkow, *Jour. A. M. A.*, 1919, lxxii, 1668.

*Continued High Mortality of Child-bearing. V. Bonney, *Med. Press*, 1919, n. s. cvii, 371.

*Premature Separation of the Placenta. P. Appleton, *Boston Medical and Surgical Journal*, vol. clxxx, 1919, p. 718.

*Acidotic State of Normal New-Born. M. Scham, *American Journal of Diseases of Children*, vol. xviii, 1919, p. 42.

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*Speculations Regarding tde Nature of Cancer. A. L. Benedict *Amer. Jour. Med. Sci.*, 1919, clvii, 742.

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B. MISCELLANEOUS.

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SELECTED ABSTRACTS.

A. OBSTETRICS.

Abdominal Pregnancy Continuing Four Months after Uterine Perforation.—In the case reported by I. E. Bishkow (*Jour. A. M. A.*, 1919, lxxii, 1668).—At about four weeks' pregnancy catheters introduced either perforated the fundus or caused a local necrosis followed by perforation, with expulsion of the products of conception into the peritoneal cavity. A portion of the placenta, sufficient to keep the fetus viable, retained its attachment to the endometrium. The rest protruded from the perforation and by partially filling up this opening controlled to some extent the hemorrhage. There must have been a slow, continuous bleeding for a large amount of blood was found in the peritoneal cavity and there was absence of any severe shock.

The fetus and the greater part of the placenta lying extrauterine became, in time, covered by a fibrinous deposit, which formed a false sac. The day preceding operation this sac ruptured and expelled the fetus into the peritoneal cavity. The size of the uterine cavity as compared with the size of the fetus shows that for a period of about four months the fetus remained viable in the peritoneal cavity.

Cesarean Section Following a Previous Extraperitoneal Cesarean Section.—In a previous article on extraperitoneal Cesarean section J. W. Markoe (*N. Y. Med. Jour.*, 1919, cix, 1022) stated his belief that the use of this operation should be limited to cases with the following indications: A patient with a living child where an infection is suspected and who cannot be delivered of that child through the normal passages. He performed it upon a case with a mixed infection of colon bacilli and nonhemolytic staphylococci of all the tissues in the neighborhood of the bladder and of the lower portion of the uterus.

The use of the Carrel tubes and treatment which was started shortly after the operation, so sterilized the infected tissues that the bacterial count became negative twelve days after the operation, allowing the wound to be closed rapidly.

Fifteen months after this operation he performed an ordinary Cesarean section upon the same patient. At this time exploration of the peritoneal cavity showed no adhesions in the region of the cervix and bladder nor in the broad ligaments.

Continued High Mortality of Child-bearing.—V. Bonney (*Med. Press*, 1919, n. s. cvii, 371) says that the chief causes of death directly or indirectly attaching to pregnancy and labor rank in importance as follows: (1) Sepsis, (2) pregnancy toxemia, (3) hemorrhage, (4) embolism and sudden death. Sepsis accounts for between 30 to 35 per cent. of the total number of deaths.

Over a period during which enormous advances have taken place in every other branch of our profession, obstetrics alone, as judged by its results, has advanced scarcely at all.

The larger proportion of the operations of recognized surgery take place in hospitals, a smaller proportion in nursing homes, and the remainder in private houses. When the public has been made to understand that labor itself is a surgical operation there will be a similar distribution of confinements. This will necessitate the establishment of large lying-in hospitals all over the country, maintained out of public funds, either national or municipal. These hospitals should be the centers for the teaching of midwifery, both to medical students and midwives, the former of whom should be resident in them for at least three months.

Extern departments as they are at present carried on should be abolished. They perpetuate all the worst features of midwifery as practised to-day, the inadequate surroundings, the wretched light, the meager assistance, and the dirt, and lead the student to think that the regime of the labor ward is an academic ideal unrealizable in practice. Poor patients whose entry into hospitals was impossible on account of domestic reasons or the sudden onset of unexpected labor might be dealt with by having attached to the central hospital an extern team, *i.e.*, an obstetric surgeon, an anesthetist, and two nurses, with a complete outfit and a motor car to carry them. The team should be able to be summoned free by the medical man or midwife in attendance in the case, for given such a team the requirements for the surgical conduct of labor could be constructed in the poorest room.

Premature Separation of the Placenta.—P. Appleton (*Bost. Med. & Surg. Jour.*, 1919, clxxx, 718) says that premature detachment of the placenta stands out as an all-important cause of both fetal and maternal mortality in childbirth, and it is probable that it occurs much more often than we suppose. Most writers state the ratio as one case in five hundred, but there is no doubt that it occurs more frequently. The predisposing causes are arteriosclerosis, uterine infarction, tumors and placental disease, the last including fatty and amyloid degeneration, syphilis, tuberculosis, infarction and tumors. The direct causes are trauma, short cord, rapid evacuation of hydramnios, and possibly irregular uterine contractions. Not only may the hemorrhage be external and visible, or internal and concealed, but a combination of both may occur in which a part of the blood escapes into the vagina and a part remains behind, collecting and increasing in amount. The onset is always abrupt. If labor has not already begun, it is suddenly and stormily begun by extremely sharp rending pains much more severe than usual and irregular. While apt to be mistaken for the onset of the second stage, a keen observer will notice the abnormal intensity of labor. The patient may subjectively feel an increasing distention, with or without a great increase followed by a great decrease of fetal motion. Physical examination shows a large, tense abdominal wall with asymmetry and localized tenderness coupled with a boggy sensation on palpation. There are signs of hemorrhage, especially increased pulse rate, and gradual rising of the height of the uterine fundus. There are exacerbations of excruciating pain of a colicky character lasting from a few seconds to two or three minutes. Sometimes there is localized pain, and if present, it is most likely to be at a point where tender asymmetry is observed in the abdominal tumor. Premature detachment of the placenta demands as rapid delivery of the patient as is consistent with her condition and environment. Excluding other factors, the average operator will select those methods in which he is most skilful. Generally the operation of choice is manual dilatation of the cervix followed either by high forceps, or version and breech extraction. Should a positive diagnosis of fetal death be made, a destructive operation would probably give the best results in saving the mother. Cesarean section is contraindicated, for the patient is a poor operative risk and previous vaginal examination causes great danger of infection. Dilatation of the cervix with the Voorhees bag, is a relatively safe but slow method. Where there is hemorrhage, one is inclined to get an impression of false security from the fact that, after introduction of the bag, bleeding is no longer visible. If born alive the baby will be in pallid asphyxia and very strenuous measures must be adopted for its resuscitation. Postpartum bleeding is common in these cases, and will frequently require packing of the uterus.

Acidotic State of Normal New-born.—M. Scham (*Amer. Jour. Dis. Child.*, 1919, xviii, 42) presents a study of the acidotic state of normal new-borns with special reference to the alveolar CO_2, tension, alkali tolerance and acetonuria. Higgins' modification of Plesch's method was employed. Instead of using the Hygeia nipple with rubber tubing over the mouth the pulmotor mask for new-borns, which could be applied very snugly to the face, was used. This method necessitates the rebreathing of a certain amount of air until it is in equilibrium with the air in the alveolæ. The initial amount of air in the bag, the length of time for breathing, and the character of the breathing, must be considered, in order to determine the results accurately. The greatest difficulty met with in securing uniform readings was that the character and rate of breath ing could not be controlled. The writer finds that alveolar CO_2 tension is a practical index of acidosis. Fifty cubic centimeters of air in the bag, over a period of thirty seconds for breathing gives the most constant results. He was unable to establish a lower CO_2 tension which is indicative of the so-called "acidotic state." The ingestion of food, or starvation and muscular exercise under these conditions, have no constant demonstrable effect on the alveolar CO_2 tension. The urine of the normal new-born is nearly always acid. It takes on an average 1.7 gm. of sodium bicarbonate to turn the urine from acid to alkaline, giving 0.16 gm. every two hours by mouth. The author's results with the alkali tolerance test for normal new-borns do not indicate an acidosis. Practically no acetone is found in the urine of normal new-borns.

B. GYNECOLOGY.

Speculations Regarding the Nature of Cancer.—A. L. Benedict (*Amer. Jour. Med. Sci.*, 1919, clvii, 742) has previously called attention to the fact that about three-fourths of all cancers arise in parts that either have an acid secretion or are prone to acid fermentation. He says that if we eliminate all consideration of cancer of the female sexual organs (including the breasts) the cancer deaths and undoubtedly the incidence is almost exactly the same, proportionately for the two sexes. Cancer of the sexual organs of the female may therefore be regarded as an element added to an approximately equal incidence for other organs. There is at present no direct evidence of a germ and no indirect evidence, geographic, racial, dietetic, etc., pointing to any definite extrinsic cause of cancer. Except by analogy from neoplasms of the lower animals which are not necessarily identical with human cancer, even though histologically similar, there is no valid evidence of a specific infectious element, such as exists without reasonable doubt for various diseases, including several exanthemata of undiscovered germ. The development of cancer seems to depend upon the susceptibility of a special part of the body but no plausible predisposing cause, as age, *per se*, or as indicative of metabolic changes, traumatisms, gross or mild and repeated, preëxisting noncancerous lesions, general state of depression or bad hygiene has, so far, been satisfactorily reduced to the "with or without" test. That is to say, no plausible cause assigned as favoring the development of cancer in a given case, necessarily has the same result in all or even the majority of cases while, on the other hand, cancer of any part may develop without any of the plausible causes used to explain other cases. We cannot prophesy with more than a small chance of fulfilment that any exposure or lack of caution, or antecedent disease, will result in cancer. The proportion of fulfilments is indeed so small that we can scarcely regard it as more than a coincidence. About the only advice we can give to prevent the development of cancer, and even then without absolute assurance, is not to subject any part to a repeated irritation of any kind, not to bear children, and to die before the age of forty. It has been well established that heredity plays no notable part in cancer. There is no evidence that anything approaching specific immunity explains the incidence or nonincidence of cancer.

Climacteric Hypertension.—A. C. Hopkins (*Amer. Jour. Med. Sci.*, 1919, clvii, 826) describes a type of high blood-pressure developing in women at the time of the menopause and possibly the result of it, in which there is no discernible arteriosclerosis, at least, for some years after its onset, no renal involvement and frequently no symptoms of any kind for possibly a decade or longer. In his series of fifty-one cases of this type the past medical histories were lacking in any of the predisposing or exciting causes of renal sclerosis or chronic nephritis. The condition is, at times discovered during the menopause, and at this time it has as its only indication a definite rise in both systolic and diastolic blood-pressure. The height of the pressure was in many of the cases very marked, running up to systolic 230–250–310 and diastolic 130–140–150. On the other hand, in the cases examined early in the course of the disease, pressures as low as systolic 180–190 and diastolic 100–110 were found. Rarely were lower figures noted, the higher ones being the rule. They are more frequently discovered several years after the menopause, when, following an indefinite period of vague symptoms, nervous, gastric or cardiac, the patients seek relief. Their appearance is strikingly healthy and their weight usually above the average; frequently they are obese. These women, usually from the upper social strata, are energetic, active and inclined to be of an intensely nervous temperament, used to good living and fond of life, but, nevertheless, subject to many worries and anxieties for years. Toward sixty years, for the first time, slight fibrosis of the peripheral vessels is noted, and during this period changes in the retinal arterioles make their appearance. Cardiac embarrassment and pain in the limbs have a decided preponderance over all other symptoms. The ultimate termination is either a cerebral hemorrhage or a cardiac death. Throughout its course there is no evidence of kidney disease. As regards etiology, the writer believes that mental strain and worry and a naturally nervous temperament when superimposed on the profound emotional and bodily changes occurring at the time of the menopause would seem to be provocative of the trouble. At the menopause, with the withdrawal of at least a part of the internal secretion of the ovary from its place in the connecting link of endocrine glands, it would be a natural assumption to consider that a certain amount of depressor influence of the ovary was withdrawn from the adrenals, hypophysis and thyroid, leaving them, as it were, out of balance. Knowing that there are produced in one or more of these glands substances that increase blood-pressure, influence the sympathetic nervous system (vasomotor system) and the sex glands, aid in regulating metabolism, and, finally, exhibit an intimate relationship with emotional disturbances, it does not seem improbable that the blood-pressure is, by a combination of these altered influences, raised and sustained at a high level. A persistently high pressure of this type will, in the course of years, produce fibrosis of the vessels, developing in the latter years of these patients.

Treatment of Infections of the Uterus and Cervix.—In discussing the treatment of cases of infective endocervicitis, F. W. Langstroth (*Med. Rec.*, 1919, xcv, 1086) states that properly directed surgical interference offers, at present, the only method of cure. The infected cervical mucosa must be entirely removed, for any portion remaining only acts as a further focus of infection. After completely enucleating the cervical mucosa, being careful not to cut away any of the muscle, so as to preserve the function of the cervical canal intact in case of future pregnancies, the cervical canal must be relined with a flap of mucosa dissected from the vaginal portion of the cervix. He has named this operation "Plastic Conical Enucleation of the Cervix." He has under observation seventy-five cases operated upon by this method. Some of these cases date back over three years. Practically every woman operated upon by this method, in which the pelvic condition had not progressed too far, was cured of her leukorrhea, menstrual disturbances, backache, etc. All of the cases were improved in general health.

Radical Cure of Femoral Hernia by the Inguinal Route.—P. P. Cole (*Brit. Med. Jour.*, June 21, 1919, 763) gives the following description of this operation. The incision is that employed in the case of inguinal hernia. It should be free and prolonged at its lower end. The external ring is defined together with Poupart's ligament, and the external oblique aponeurosis divided throughout the length of the inguinal canal. The arching fibers of the conjoined tendon are cleanly demonstrated, the cord or round ligament defined and dislocated from its bed. An incision is then made through the transversalis fascia where it forms the posterior wall of the inner part of the inguinal canal and the deep epigastric vein lying well to the inner side of the artery is sought for at the outer end of the incision. This vein marks the outer edge of the peritoneal diverticulum that leads to the femoral ring. Separation of it renders easy the definition of the outer aspect of the neck of the sac. Some curved blunt instrument or the finger can then be passed behind the neck of the sac and made to emerge in the wound on its inner side. The condition of the sac as to contents can then be easily ascertained. If it is clear that nothing is passing through the neck from the peritoneal cavity, an endeavor is made by blunt dissection and gentle traction to deliver the sac from the thigh. The sac is opened and ligated at or above the junction with the peritoneal cavity. The iliac vessels are then pulled outward and the femoral ring clearly defined. Three sutures are then passed through the conjoined tendon above, and below through the posterior thickened margin of the femoral ring—Cooper's ligament. The outermost of these sutures lies close to the vein and should be inserted first. When tied, these sutures bring the conjoined tendon in contact with the posterior boundary of the ring, and a new bed for the cord or round ligament is thus constituted. No attempt is made to close the femoral ring. All direct communication with the peritoneal cavity is abolished—the femoral ring opens into the musculature of the anterior abdominal wall. The remaining structures are united as in an inguinal hernia. If, though empty, the sac cannot be delivered easily, the neck is cut across, and the hole in the peritoneum thus resulting is sewn up in the usual way.

The Hypophysis in the Treatment of Diseases of Women.—Dalché in the *Revue mensuelle de gynécologie et d'obstetrique* for May gives a study of this subject which is none the worse because it is extracted from the manuscripts of a forthcoming book. The author starts with another subject, to wit the action of emetine in metrorrhagias. He finds an analogy here with the action of hypophysis substance which is a call to an investigation. Is the action of emetine of the same stamp as the action of hypophysine? The author does not believe that these two substances are ever synergists; rather should they be antagonists. The reasoning is as follows: experimental hypophysectomy leads to atrophy of the genitals and dwarfism; in acromegaly the genitals atrophy as shown by suppression of the menses and absence of the genesic instinct. Genital infantilism is associated with amenorrhea; infantilism with lack of development of secondary sexual characters, frigidity and amenorrhea, as seen in the syndrome known as Froehlich's disease. To which should be added the genital atrophy and absence of sex differentiation seen in hypophysary dwarfs. Rist discovered that injections of hypophysin arrested the hemoptyses of the tuberculous. Others added that hypophysin was a blood coagulant. Bab discovered that hypophysine ranked in metrorrhagia with ergotine, stypticine and hydrastine. Jayle and Renon respectively upheld the action of hypophysine in uterine hemorrhage irrespective of cause, and in depressing the ovarian functions in general. The substance contracts the muscle fibers in organs other than the uterus and is a vasoconstrictor and elevator of blood pressure. The details of the use of the drug in a great number of clinical conditions would require too much space for an abstract.

Prevention of Sterility in Young Women When Operating for Tuberculous Peritonitis.—J. H. Carstens (*Jour. A. M. A.*, 1919, lxxiii, 23) says that it has become a custom with some surgeons when operating for tuberculous peritonitis to remove the tubes whether there was mixed infection or not, simply in order to close an avenue for the entrance of tubercle bacilli, which were supposed to be poured out from the end of the tube into the peritoneal cavity. Tuberculous peritonitis is of systemic origin, and does not come from the outside through the tubes; hence, there is no occasion to remove and close them.

Modified Technic of Watkin's Interposition Operation Designed to Permit Child-bearing without Complications.—J. C. Hirst (*Penn. Med. Jour.*, 1919, xxii, 546) says that there is no more difficult problem in gynecology than the cure of large cystoceles in young women, in whom further child-bearing is to be expected. The deformity is most often the result of a difficult forceps delivery, particularly after axistraction forceps delivery, and all attachments of the anterior and lateral vaginal walls are stripped loose by the drag on the head. In these cases the ordinary operations for cystocele are sure to fail. The only operation to be depended on in such cases is the one known as the Watkins-Wertheim-Freund operation of interposition. The author has used for some years a variation of the technic of the original interposition operation, designed to permit future child-bearing. The patient is prepared as for any vaginal operation in the dorsal position. The cervix is pulled down by a volsellum, and the anterior vaginal mucosa separated from the bladder by the usual upside down T-incision and dissection back of the lateral flaps. It is important that the retracted vaginal fascia be dissected off with the mucosa, and not left adherent to the bladder wall. The uterovesical ligament is cut, and the bladder pushed up as in any interposition operation, a retractor placed under the bladder and the peritoneal reduplication caught in a clamp. The peritoneum is opened, the retractor removed and the uterus caught by a volsellum and gently pulled out through the opening in the vaginal vault. A rather short, heavy, curved, spear-pointed needle, threaded with No. 3 chromicized catgut, of forty-day durability, catches the fascia in the right side at the upper portion of the vaginal wound (nearest the urethra), passes through the uterine wall, not between the tubes, as in the Watkins operation, but at the junction of the middle and upper third of the anterior uterine wall, and then catches the fascia in the left side opposite the first bite. This refers to the operator's right and left, and not the patient's. Three or four similar stitches are passed, about one-fourth inch apart, working from above downward. The uterus is replaced through the opening in the vaginal vault, and the stitches are then tied from above downward. In this way the uterus is simply held forward, and is not extremely anteflexed or anteverted, as in the Watkins operation, and is left as an intraperitoneal organ. The excess of mucosa is cut off, to ensure an accurate fit, and the vaginal wound is closed by interrupted stitches of No. 3 chromic catgut, forty-day durability. The patient is then catheterized, to exclude possible injury to the bladder. A stay in bed of at least two weeks is essential, and catheterization for the first four or five days is nearly always required. Of eighty-nine cases, the history of forty-nine is known. Of these seven have become pregnant. Of the seven, two miscarried, due probably to overexertion. Five went through labor at term, one of them twice. Four of the five, including the one with two deliveries, show a very normal looking anterior vaginal wall; the surgical result is good, and they are symptomatically well. The fifth case has a measure of recurrence.

C. MISCELLANEOUS

Bladder Function.—A. H. Curtis (*Surg.,Gyn. & Obst.*, 1919, xxix, 24) has studied the effects of noncatheterization of the paralyzed bladder in twenty-two male rabbits. Extreme distension occurred thirteen times, with spontaneous rupture of the bladder in one instance. Nine showed extensive vesical erosions or ulceration. Back-pressure with ureteral and kidney pelvis dilatation was usually present; in six cases this caused wide paths of almost complete destruction of kidney tissue. Bacterial invasion of the urinary tract was demonstrable in ten of the twenty-two animals operated upon. These experiments indicate that the uncatheterized paralyzed bladder, in the rabbit at least, is liable to back-pressure, dilatation of kidney and ureter, infection of the urinary tract and destruction of renal tissue. Irregularly performed catheterization for retention of urine is unsatisfactory. Patients so treated are subjected to such dangers as accompany the passage of the catheter and are also liable to accumulations of infected stagnant urine. The catheter should be regularly passed often enough to prevent vesical distention and its use must be persisted in until daily tests show that residual urine is no longer present in the bladder.

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ORIGINAL COMMUNICATIONS.

CYSTIC TERATOMA OF THE OVARY, WITH CARCINOMA.*

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(With five illustrations.)

TERATOMA comes from teras meaning monster and oma a termination signifying a neoplasm or tumor. So vague is our understanding of these interesting tumors that in classifying them many words such as dermoids, teratoma, teratoid, embryoid, morular tumors, etc., are used interchangeably and often erroneously. Etymologically, dermoid means like skin and the word should be limited to define those tumors formed by skin inclusions which are composed of epiblastic tissue alone. With this understanding there could be no such tumor as an ovarian dermoid as no tumor of the ovary composed exclusively of epiblastic tissue has yet been described.

The term ovarian dermoid is used erroneously to designate a relatively large class of cystic ovarian tumors, composed of the three embryonal layers which are supposed by many to be only rarely and by some, never malignant.

Bland-Sutton limited the word teratoma to those skeletal tumors connected to the spinal column, which are composed of the three embryonic layers, epiblast, mesoblast, and enteroblast, representing probably an inclusion monster growing as a tumor on an individual as host. To many others teratoma signifies malignancy and is limited by them to define a small number of about fifty reported cases of solid ovarian tumor, composed of the three embryonal layers,

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NOTE.—The Editor accepts no responsibility for the views and statements of authors as published in their "Original Communications."

which forms metastases and recurs after removal causing death of the patient(1).

In this paper the classification given by Eden and Lockyear, dividing ovarian teratomata into cystic teratomata, usually called dermoids and solid teratomata will be followed and an effort will be made to call attention to the fact that cystic teratomata are more often malignant than is generally recognized.

Cystic teratomata are found in the ovaries of women of all ages although they are more frequently noted during the child-bearing period. It has been stated by different investigators that these tumors form from 7 per cent. to 18 per cent.(2) of all ovarian neoplasms. The latter figure probably being somewhat excessive.

Many theories as to the origin of teratomata have been advanced. Abnormal impregnation, parthogenesis, impregnation of polar bodies, twin inclusions and many other theories have given place, of late, to the theory advanced by Marchand and Bonnet(3). According to this theory, the earliest division of the impregnated ovum, dividing into sexual and somatic cells to form the morula stage of embryonic development is abnormal in that certain somatic cells are shaken loose and become implanted with the sexual cells forming the ovary or testicle, which cells later develop into teratomata. This theory is subject to a certain amount of experimental proof.

The solid more malignant teratoma develops as a tumor composed of early embryonal tissue in utter disregard of the laws of true tissue formation. The cystic teratoma resembles later stages of fetal life and produces tissue layers and irregular organic structures composed chiefly of epiblastic but also at times of mesoblastic and rarely of enteroblastic structures. The tumor is composed of a more solid embryonic portion called the core and a much larger cystic portion containing an irritating semisolid substance produced by the epithelial lining of the cyst. Hair is usually found in the cyst springing from the core and at times teeth and other epithelial cranial structures are present. That the hair and the cyst fluid are sources of chronic irritation to the epithelial lining of the cyst is evidenced by the frequently found layers of granulation tissue containing giant foreign body cells in the cyst wall. Fetal membranes have never been found in these tumors nor have more complex organs of late fetal life such as liver, pancreas and kidney been noted.

The question as to the possibility of malignancy in cystic teratomata has long been a subject of pathological interest which has failed so far to seriously impress clinicians. Bland-Sutton in the Second Edition of his book on "Tumors, Innocent and Malignant"

(1901) says "that the innocency of ovarian dermoids cannot be impeached with the scanty and unreliable evidence at present available." Nevertheless, Shoemaker, in 1900(4), referred to several case reports on the occurrence of sarcoma with ovarian dermoids. Lindsay Peters(5) also reported, in 1900, the incident of dermoids and carcinoma as found with 7600 patients in the Gynecological Clinic at Johns Hopkins Hospital as follows: Dermoids 42, with ovarian carcinoma 2 or 4 per cent. He mentions four possible malignant associations as follows:

1. Carcinomatous degeneration of the dermoid.
2. Carcinomatous degeneration of the ovary with associated dermoid of the ovary.
3. Carcinomatous degeneration of an associated multilocular cyst of the ovary with dermoid.
4. Carcinoma of contiguous organ invading a dermoid.

S. Wiener reported, in 1915(6), sixty dermoids found with 269 ovarian tumors in which there were three squamous cell carcinomata developing in the dermoids, or an incidence of 5 per cent.

Williamson and Barris(7), in 1911, state that the existence of adenocarcinoma in a dermoid has not been proven. They found thirty-two case reports in the literature of squamous cell carcinoma of ovarian dermoids of which number they rejected sixteen because the reports were too scanty and two they were unable to verify. The first accepted case was reported by Bierman(8) in 1885. De Laponge in 1914 (Archives Generales de chirurgie, Paris, vol. viii, p. 769) reported three cases of cancer in dermoids and summarized forty other reports. He quotes Ruscky Vrack as saying that no instance of complete recovery has been known following carcinomatous degeneration of dermoids. One patient only among sixty cases on record, lived for a period of seven years.

No one as yet reported carcinoma arising from the sudoriparous or sebaceous glands. Nevertheless, Yamagiwa(9) describes an alveolar carcinoma in a cystic teratoma that he believes originated in the breast glands of an immature mammary structure. Also the tumor described by Himmelfarb(10) was alveolar in structure.

In the present report some discussion arose in the laboratory concerning the apparent alveolar arrangement of the carcinomatous tumor, the idea being that the alveoli were not true glands but rather resembled glands by reason of the dipping in of connective tissue structures into the solid epithelial part. Also in the present report attention is called to the fact that the skin glands of the teratoma are being invaded by carcinoma.

In view of the evident irritating character of the contained cyst fluid, together with the chronic irritation caused by the hair, producing as it does granulation tissue with giant-cell formation, it is remarkable that more cases of carcinomatous degeneration of the epithelial lining of teratomatous cysts have not been observed. A possibility exists that too often these tumors are regarded as innocent and no gross or microscopical examination of the tumor is made as a matter of routine. With our patient there has, so far, been no evidence of recurrence, a fact uniquely at variance with the heretofore reported cases. This suggests the possibility that with early carcinoma the prognosis may be good because of the thick protecting capsule of the teratoma. Clinically this should lead to the more careful pathological study of such tumors as are resected from the ovaries of young women.

In view of the skepticism usually expressed in commenting on carcinoma of the ovary arising from the epithelial lining of a cystic teratoma, the following case report is made with temerity. The tumor was noted some days after operation following the laboratory routine which has to do with more pathology than the staff can promptly handle. It has taught the lesson, however, to cut all tumors grossly in the operating room and to have frozen sections made in suspicious cases before the abdomen is closed. The patient reports every six months for examination, a condition that is hard for her to understand as so far she has remained in perfect health.

Case Report. Mrs. K. T., Reg. No. 53211. Aged fifty-three. Para-iii. Came to the Women's Clinic April 6, 1917, complaining of pain in the right side of lower abdomen for the past three weeks. Pain is dull in character which comes and goes at various times of day and night. Has a slight yellowish discharge. States she has had some burning on urination and some incontinence. Bowels constipated. Menstruation always normal. Menopause in 1914. On examination there were found slight external hemorrhoids, vulva open, slight cystocele, marked redundance of mucosa over Skene's glands, small indurated left Bartholin's gland, Levator ani muscle torn, large rectocele, uterus has right-sided enlargement, quite hard and tender. There is a mass in the right side of pelvis which does not move with the uterus. Cervix is small, no laceration.

Operation Oct. 24, 1917, the anterior wall of the vagina was dissected free from the bladder and the bladder sphincter tightened. Perineorrhaphy. On opening the abdomen a small normal ovary and tube were found on the left side. Right ovary was about the size of a large orange apparently a teratoma. Right tube normal. Right ovary and tube were removed. Appendix was small and fibrous in character. Removed. Gall-bladder and liver normal. Patient left the hospital Nov. 3, 1917 in good condition. Returned to Clinic December 19, 1917 feeling well, no incontinence, no pain. Pelvic examination showed good operative result. No tenderness. Reported at request April 2, 1919, feeling well. Pelvic examination negative.

Description of Tumor.—Gross weight of right ovary and tube 310 grams. Right ovary 9 × 10 × 8 cm. Wall of tumor resembles parchment with many small blood-vessels. At one point is a small nodular mass 2½ × 1½ cm. On section, tumor contains a gelatinous fluid with much red hair. Nodule (Fig. 1*a*) is yellow in color resting on cyst lining and surrounded by a narrow margin of ovarian tissue.

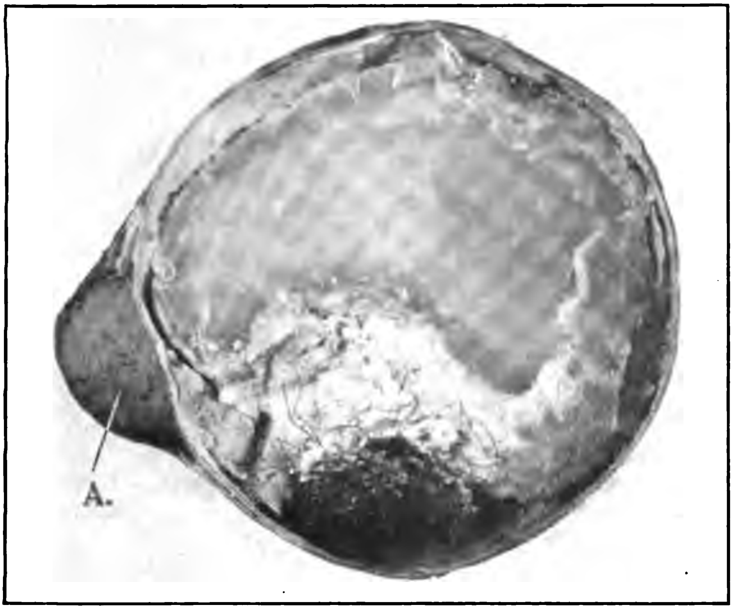

Fig. 1.—Cross section of cystic ovarian teratoma, showing at (A) an associated carcinoma.

Microscopic.—Sagittal section of small tumor on cyst wall shows a thin stratum of pavement epithelium with a distinct basement cell layer. This epithelial layer varies in thickness and at one point (Figs. 2 and 3) gives the appearance of a malignant change. The epithelial cells are increased in number at this point forming a small epithelial pearl, and seems to be breaking through the basement cell layer to invade the deeper tissues. Immediately beneath the epithelium is a layer of connective tissue and muscle cells which contains many sebaceous glands and several hair follicles. Several

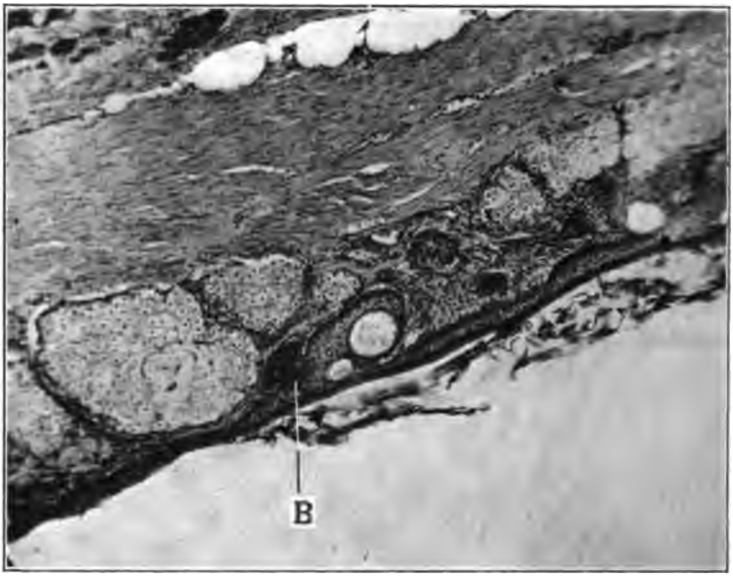

FIG. 2.—Low power photomicrograph, showing epithelial lining of cyst with sebaceous glands. At (B) the epithelium is thickened, apparently breaking through basement membrane.

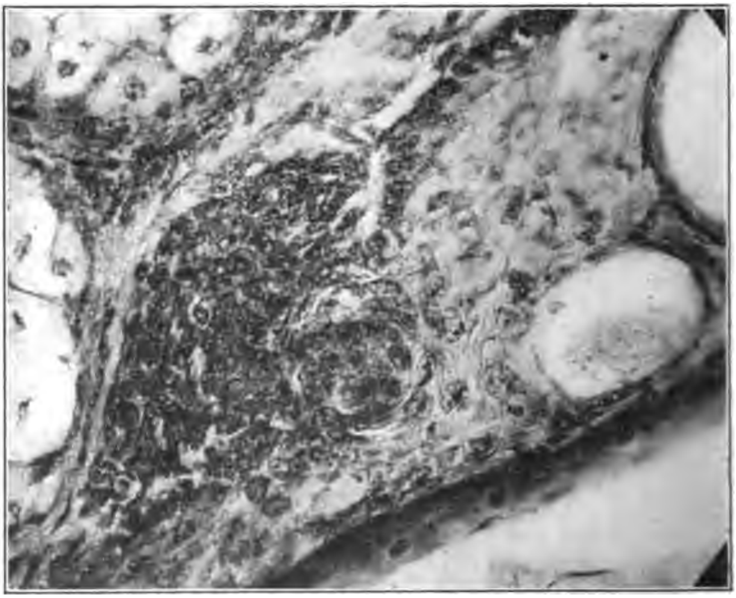

FIG. 3.—High power photomicrograph, showing atypical epithelium at point (B) in Fig. 2.

of these glands are invaded with epithelial cell masses resembling basal cell carcinoma (Fig. 4).

Intermingled with the deeper layers of the connective tissue and extending to the fibrous capsule of the teratoma but not penetrating it is a carcinomatous mass forming in part solid masses of small round epithelial cells surrounded by a scanty amount of connective tissue and in part small collections of epithelial cells having an alveolar arrangement (Fig. 5).

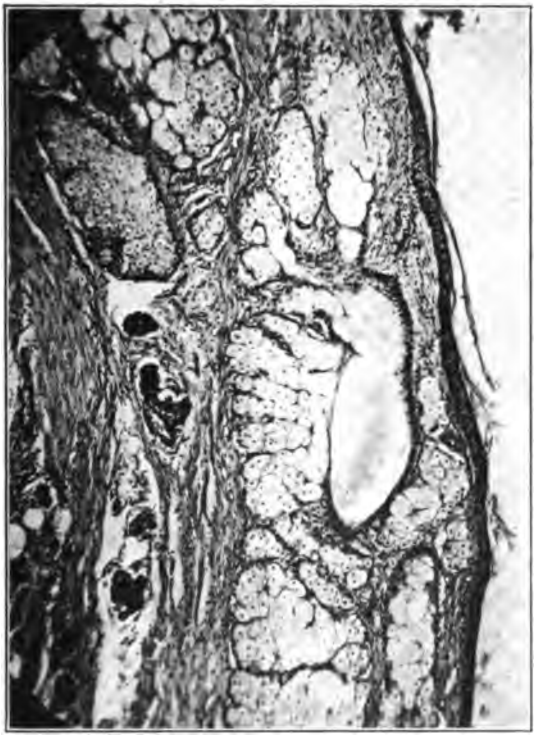

FIG. 4.—Microphotograph of a section of the cyst wall, showing invasion of sebaceous glands with carcinoma.

At either pole of this carcinomatous mass is an area of tissue resembling the normal ovary, at one point of which can be seen a distinct corpus albicans. The capsule of the teratoma is composed of dense connective tissue fibers.

It is difficult to decide whether in this specimen we have an adenocarcinoma or a basement cell carcinoma, whether the malignant tumor is primarily in the ovary or comes from a malignant degeneration of the epithelial lining of the teratoma.

In favor of the probability of a malignant degeneration of the teratoma is the condition shown in Figs. 2 and 3 where apparently the deep layers of the pavement epithelium are undergoing a malignant change. Furthermore, the structure and arrangement of the cancer cells is not unlike that seen in other basal cell carcinoma. Finally the appearance of the other ovary was apparently normal. In ovarian carcinoma frequently both ovaries are affected.

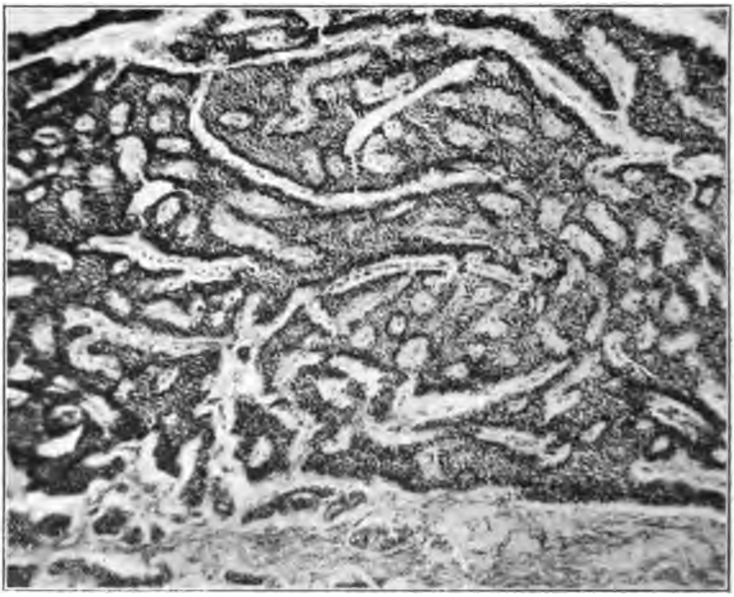

FIG. 5.—Photomicrograph of a section of carcinoma, showing alveolar arrangement of epithelial cells.

Clinically, this case is of interest in that among eight cystic teratomata studied in the laboratory this one shows an associated early carcinoma.

As others have reported that 5 per cent. of cystic teratoma show malignant changes, this fact should serve to impress clinicians with the need of careful pathological study of these interesting neoplasms. So far, after two years, the patient here reported, is well.

LANE HOSPITAL.

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RESECTION OF THE MIDDLE PORTION OF THE CERVIX FOR HYPERTROPHIC ELONGATION OF THE CERVIX UTERI. SHORTENING OF THE UTEROSACRAL LIGAMENTS THROUGH THE VAGINA.*

BY

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(With five illustrations.)

THE term hypertrophic elongation is here used to identify the class of cases under discussion and without regard to pathological value.

They are enormous elongations of the middle portion of the cervix uteri attaining in some instances an increase of 4 to 6 inches in length, permitting the vagina to become completely everted while the fundus remains in the plain of its normal elevation. This occurs in young nulliparous women more frequently than others. These women for moral reasons oppose sterilization. It is competent and right, therefore, to submit the technic of any surgical procedure that may afford relief and to use it in preference to the more frequently employed hysterectomy.

This condition is at times confused with procidentia, but the error is inexcusable and should not occur, for it is an easy matter to measure the depth of the uterus and compare it with the length of the cervical canal, the latter may be determined by locating the position of the internal os with an olive pointed bougie. In addition, it may be noted that the paracervical tissues are much more freely movable than in the other class of cases.

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* Read by title at a meeting of the American Gynecological Association, Atlantic City, June 14–17, 1919.

The free mobility here referred to is due to an excessive deposit of loose connective tissue. In normal amounts it is a provision on the part of nature to aid in eccentric displacement in the process of labor, but without tendency to abnormal elongation of the cervix or downward displacement of the upper end of the vagina. Upon the other hand, pathological sections show that excessive deposits become a prominent predisposing factor in the cause of the disease in question. Often it is so marked that a 3 to 4 inch section of the portio-media may be easily stretched from ½ to ¾ of an inch by simple pulling with the fingers. And in some cases the peritoneum of Douglas' pouch may be easily slipped off up to the corpus by passing the finger between it and the posterior

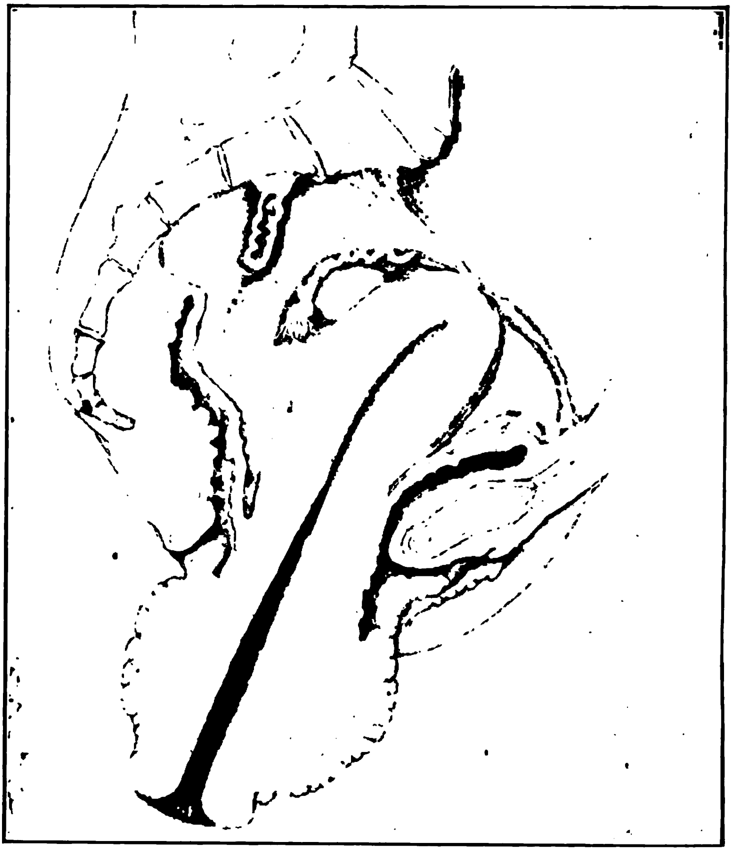

Fig. 1.—Hypertrophic elongation of the cervix uteri. Diagrammatic mesial section.

wall of the neck of the uterus. In others it is less loosely attached, but by blunt dissection of the vagina, bladder and uterus very loose interspaces between these organs may be easily demonstrated.

It seems that the neck of the uterus stretches by tension from below, and as it elongates the upper anchorage of the vagina being disturbed, it follows in the process of descent, literally stretching away from its supporting structures. On account of this condition, it is necessary to make free dissection with a view of replacing loose connective tissue with scar tissue to secure adequate fixation.

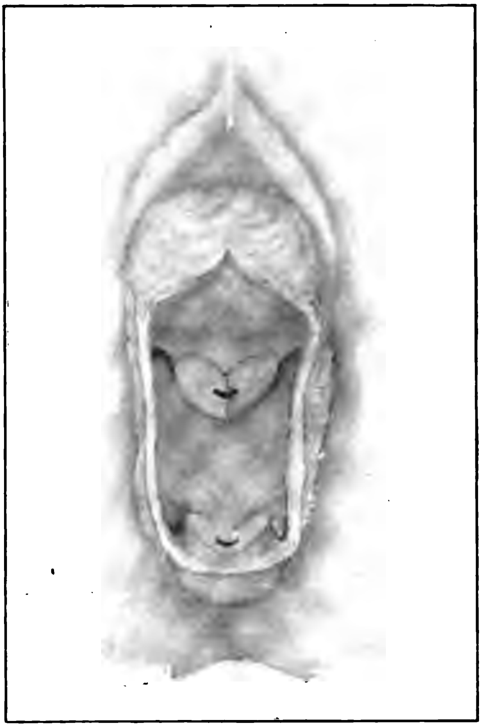

FIG. 2.—V-shaped and wedge stump after resection.

The incision is made in the anterior median line of the vagina after the manner of vaginal hysterectomy except that in place of encircling the cervix the ends of the Y terminate at the side of the portio vaginalis.

The bladder is liberated from the trigonum to the uterovesical peritoneum and latterly the dissection is extended outward along the base of the broad ligaments to the ureters on either side; and the peritoneum of Douglas' pouch is stripped free from the cervix up to the internal os.

After liberating the neck of the uterus it is detached from the vagina by a V shaped incision, cutting from either side downward and toward the axis of the cervical canal. The incision should be made low enough to place the apex of the V at the vaginal junction.

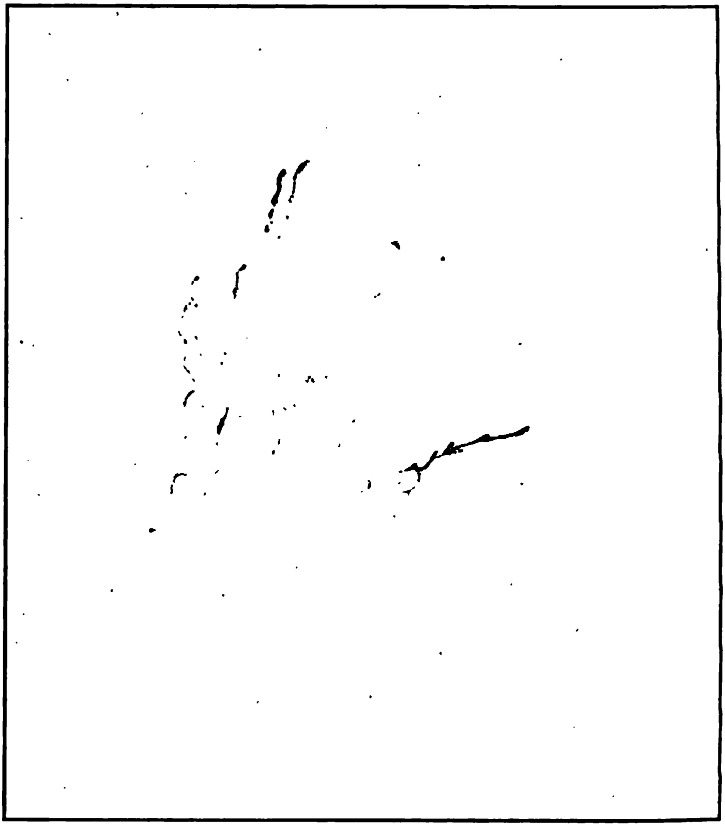

FIG. 3.—Picking up uterosacral ligaments. Forceps passed through base of broad ligament.

The resection is then completed by a similar incision immediately below the internal os, the effects of which produces a wedge shape stump of the uterus with the plains of the wedge looking mes ab.

At this juncture the finger is passed into Douglas' pouch to locate the uterosacral ligament on the patient's left. Should it be completely effaced its markings may be located by drawing the uterus downward when a fold may be felt extending from the cervicocorporeal junction to the sacrum. With a pair of curved artery forceps thrust through the base of the broad ligament in the space between the uterus and ureter (below the uterine artery) the fold or ligament is drawn well into the vagina and temporarily secured by a long retention suture tied or clamped and turned aside. The ligament on the opposite side is treated in like manner.

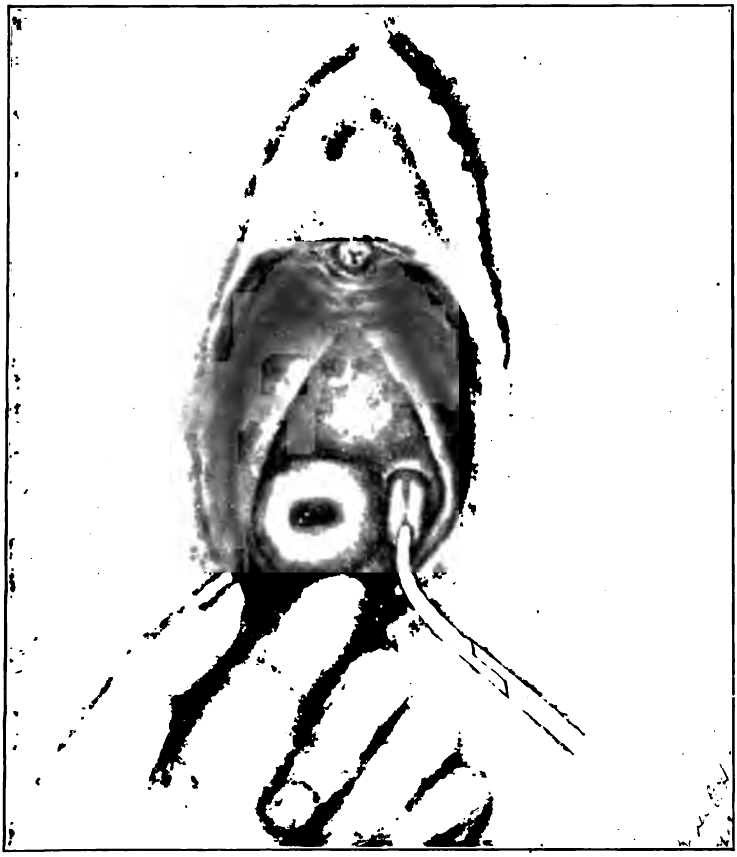

FIG. 4.—Uterosacral ligament turned into the vagina.

Following this step the wedge stump of the uterus is secured in the V of the vaginal stump, first by introducing a forcep or similar instrument through the vaginal portion and into the cavity of the uterus. Upon such an instrument the two sections are brought together and secured by a mattress suture of kangaroo on either side. To maintain perfect alignment of the canal a suture of catgut fixes the tip of the wedge into the angle of the V. By pulling upon the temporary retention sutures attached to the uterosacral ligaments, the latter will be drawn into the denuded field and tracing them step by step using one pair of forçeps after another they may be brought far enough into the vagina to be sutured together in front of the cervix, the latter being forced well back into the hollow of the sacrum to secure normal fixation of the lower pole of the uterus.

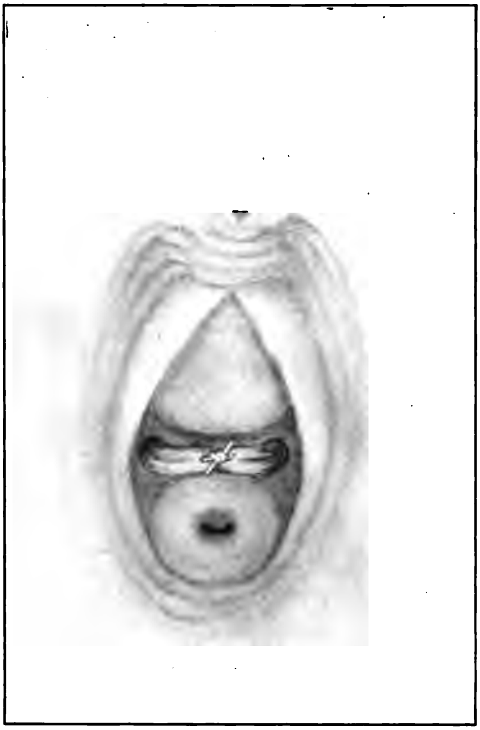

FIG. 5.—Uterosacral ligaments sutured in front of the cervix.

Then excess of vaginal flaps are trimmed away as in operation for cystocele and closed with buried kangaroo the lower angles being left open for drainage. Edema of the vaginal portion commonly disappears without attention, but when the hypertrophy is due to inflammatory changes wedge shaped sections of anterior and posterior lips may be removed with good effect.

On account of relaxation of vagina and its outlet posterior colporrhaphy with especial attention to constructive reinforcement of the perineum is essential to effective employment of the mechanical principles involved in the technic of the operation

It may be said relative to end-results that a small number of cases only have been subjected to this technic, but there have been no recurrences up to the present, the periods of time since operating varying from two to six years. Four of these women had to do hard manual labor, but the fifth was in better circumstances.

In the face of these facts it seems to me that this method of procedure offers encouragement worthy of consideration if used in cases when an excess loose connective tissue is not encountered in the pelvic floor above the internal os.

186 S. PRYOR STREET.

ARE THE OPERATIVE PROCEDURES DONE FOR DYSMENORRHEA AND STERILITY JUSTIFIABLE IN THE LIGHT OF DEVELOPMENTAL STUDY?*

BY

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In the study of sterility and dysmenorrhea one should differentiate between those cases which are due to inflammatory disease and those which are the result of developmental defects. Unfortunately this distinction is not made by the average gynecologist.

I am in accord with the statement of Garretson that the life of every woman is dominated by her ductless gland system. Certain of these glands assume a dominating influence on the morphology, physiology and pathology of the individual and by reason of this, we are able to designate persons in terms of glandular types recognizing thyroidal, adrenal, pituitary and gonadal types, many of which are mixed types and designated thyroadrenal and pituitoadrenal. Take for instance the pituitary type where there is an arrested development in the anterior lobe. In all of these women there is arrested development and deficiency in the ovarian secretion. Menstruation starts late, is irregular, and painful, the intervals becoming longer, and often after marriage she grows stouter rapidly and has an amenorrhea. She usually consults a physician believing herself to be pregnant, and on examination he finds a very small undeveloped uterus with a typical conical cervix, a defective invagination both anteriorly and posteriorly, small vaginal vault, lack of a seminal pool, deep symphysis, narrow pubic arch and a funnel pelvis. Such cases offer but little resistance to the gonococcus, the infection often extending rapidly through the uterus to the tubes.

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*Read at the annual meeting of the American Gynecological Society, Atlantic City, June 14–17, 1919.

Upon opening the abdomen of women of this type it is common to find small round white ovaries with a thickened tunica. It is exceptional to note that there is a corpus luteum or a well matured follicle on the surface. On the other hand there may be several small follicles which are crowded together beneath the tunica unable to mature, consequently, not having ova which are properly maturated, although ovulation takes place, it is deficient and pregnancy is not likely to occur.

The ovary is an integral part of two physiological systems: the secretory and the reproductive, between which it occupies the position of a connecting link. On the other hand the ovary is a member of a correlated chain of glands of internal secretion, the integrity of each one of which is necessary for the proper physiological balance of the whole group.

During the period of development before puberty, the interrelation between the ovary and the other glands is of great importance. During maturity and up to the time of the menopause, the ovary plays a subordinate but by no means insignificant part. In the reproductive system the ovary is the predominant factor but is not wholly independent for its function depends largely on its physiological association with the uterus and the endometrium.

Each individual before treatment is instituted should be studied as to the type of gland which is predominant and the type of gland which is deficient, and in the treatment of these cases, it should be our aim to use such medication as will control the further active development of the predominating gland and will stimulate the development of the deficient gland, for instance in the type of case just described a combination of small doses of thyroid and gradually increasing doses of ovarian or corpus luteum to effect a cure of the dysmenorrhea and add to the possibilities of pregnancy.

Many women just married are the subject of infection, either as the result of miscarriage, or pregnancy and labor or as a result of gonococci. Those who have postabortal or postpartum infection frequently change their menstrual habits and often become sterile as a result, not of actual tubal disease but as a result of defective ovarian secretion brought about by the inflammation extending through the lymphatics in the broad ligaments, through the hilum of the ovary, or through the broad ligaments to the peritoneum establishing a low type of peritonitis which causes a thickening of the tunica and arrests the development of the follicular elements within the stroma of the ovary. If one but realizes that the tunica is but a condensation of the stroma of the ovary, it is easy to see how inflammatory changes in and about it will cause an increase in the thickness of this limiting membrane. Dependent upon this we have incomplete maturation of the follicles.

In opening the abdomen in many cases of those who had been subjected to a long continued infection of the parametritic type, we found that invariably one clinical picture was present, namely that the ovary was small, sclerosed and the tunica thickened. These women not infrequently have had an amenorrhea for months after their infection or if they have not had an amenorrhea, their menstrual function has become irregular and scanty. These cases take a long time to regenerate and here again the use of endocrines, particularly those having influence on the ovarian secretion materially aid the reëstablishment of menstruation.

But few cases of dysmenorrhea need any form of operation. It is fallacious to suppose that the pin-hole os, the long cervix, the anteflexed uterus have any actual etiological relation to painful menstruation, when one realizes that menstruation is not controlled in the uterus but by the ovaries. These abnormalities while they do not cause dysmenorrhea *per se*, cause a circulatory stasis which increases after marriage. This circulatory stasis produces a permanent pathology not only in the uterus but in the ovary. The uterus drops in the pelvis, is edematous and as a result there is a deposition of round cells which increases its bulk. The ovaries have their circulation interfered with and the same engorgement takes place within the stroma and the same deposition of round cells takes place within the capsule. This offers another obstruction to the follicular elements in their progress toward the surface and complete maturation, the result of which is dysmenorrhea. Such a continued state can give rise to but one symptomatology. To establish the proper circulatory relations within the uterus and ovaries, correction is necessary. When this is done, if the changes have not advanced too far, the ovaries are capable of reëstablishing their function. If they already have reached a degree of pathology where there are various multicysts on the surface, or where the tunica is immensely thickened, some surgical procedure will have to be used upon the ovary in order to favor the proper maturation of the follicles.

In infravaginal hypertrophy of the cervix, we have another mechanical obstruction to pregnancy. Since a woman with such pathology has no seminal pool and the long cervix in the axis of the vagina acts precisely as the piston does to the pump, she does not retain the seminal secretion. A large proportion of these cases of sterility should be cured by excision of this portion of the cervix, provided the ovarian function is competent and there is nothing in the cervical secretion antagonistic to the male elements.

In the study of individual cases of sterility, just as much attention should be paid to the type of woman as is done in the study of an individual case of dysmenorrhea. For here again is overaction on the part of one gland with inactivity on the part of another. The essentials for fecundation are a healthy spermatozoid, healthy cervical discharges, a healthy ovum and a proper route of passage for the ovum to meet the spermatozoid.

Endocervicitis disturbs the character of the discharges. Not only does it act as a mechanical barrier to the entrance of the spermatozoid, just as sticky fly-paper tangles the fly and tires him out, but it also interferes with his activity by disturbing the normal reaction of the secretion of the vault of the vagina.

In investigating these cases, the only intelligent method consists in a study of the activity of the spermatozoa in *various* locations as was suggested by Hühner. This may be done by having the patient copulate and then abstract at varying periods the ejaculated semen from different locations; from the vault of the vagina, from the cervix, from the cervical canal, and from the interior of the uterus. If living spermatozoa are found in the vault of the vagina after copulation and in the cervical canal an hour or an hour and a half after the act, it is reasonable to suppose that the male partner is competent to deliver the spermatozoa. On the other hand, if they are found living for a long period in the vaginal vault or at the entrance of the cervix and dead within the cervical canal, it readily shows that there is a secretory disturbance in the canal which is antagonistic and which kills these particular spermatozoa.

There is no class of gynecological cases which has received such empirical and random treatment as those of dysmenorrhea and sterility. Each group of men has developed and performed operations based on a few scientific principles with utter disregard of the developmental processes. Until we all appreciate what the effect of arrest or higher activity of the internal glandular secretion means, it would seem almost impossible to apply operative procedures for the correction of these congential deformities. A few years ago we were using the Dudley operation and became enthusiastic with our results, but when they were recorded we were amazed to find that there were no more pregnancies from the Dudley than from those cases which were simply dilated, those which were dilated and packed, and those in which a stem was introduced. In addition to this, the normal condition of the genital organs had been interfered with, an ulceration at the site of an unhealed Dudley wound and a parametritis causing backache and dyspareunia was frequently produced, leukorrhea was caused instead of cured, and a leukorrhea stained with bloody discharge followed copulation. With all this we had only 27 per cent. pregnant. Then Reynolds appeared with his operation for the cure of anteflexion which was conscientiously used in a long series of cases and some of these cases are still coming back to us with painful spots in the anterior wall, complaining of dyspareunia.

The following case histories may be submitted for your consideration as illustrative of the occasional possibilities following the use of endocrine therapy.

Miss M. G., aged twenty-seven, chief complaint, dysmenorrhea. Menstruation began at thirteen, twenty-eight-day type, four-day habit.

Always had severe menstrual cramps and nausea, which required that she remain at home for two days each month. Vaginal examination—normal non-parous introitus, small conical cervix pointing forward with short anterior invagination. Fundus acutely anteflexed and freely movable. No adnexal or parametrial pathology palpable.

Glandular therapy instituted Nov. 20, 1918. Menstruated Dec. 8, without nausea for the first time in her life. Pain not relieved. Menstruated Jan. 2, 1919—a little nausea but no pain for the first time. February period without pain or nausea. March and April no nausea and very slight pain. Has not been absent from business for three months.

Miss J. H. R., aged twenty-three, chief complaint, dysmenorrhea. Menstruated at twelve, twenty-eight-day type, seven to ten-day habit.

Always had dysmenorrhea and nausea which were increasing in severity. Rectal examination—small anteflexed retroposited uterus. No adnexal or parametrial pathology palpable. Glandular therapy started Jan. 17, 1919. Nausea so severe with February period that she remained at home, but felt so well in March that she continued at work. April period, pain very slight, no nausea. May, only six days' duration, very little pain, no nausea.

Mrs. P. W., aged twenty-seven, menstruated at thirteen and one-half, never regular (two to four months) five to six-day habit. Chief complaint, amenorrhea (for four months thought herself pregnant). Always had to be in bed for two days with premenstrual cramps and nausea.

Married June, 1916 at which time she weighed 140 pounds. Examination at first visit February 8, 1918, very adipose abdominal wall, normal introitus, small anteflexed uterus no adnexal or parametrial pathology palpable, weight 193 pounds. Glandular therapy instituted, Feb. 8, 1918. March 8th, weight 182½ pounds. Menstruation started March 9th and lasted for ten days (following five months amenorrhea). May 7th, weight 174 pounds two and a half months pregnant, June weight 173, July, 166 pounds. Full-term male child Dec. 20, 1918.

Mrs. G. B., aged thirty, chief complaint, sterility and dysmenorrhea. Menstruated at twelve, never regular, twice a month or every two or three months, seven-day habit. Always had first day cramps and headache. Married February 1912, weight 124 pounds. Miscarriage August, 1912, at three months. Dilated and curetted February, 1914. Commenced to grow stout after miscarriage and in April, 1915, weighed 184 pounds. Patient put on a restricted diet and course of exercises and glandular therapy started July, 1915, lost 25 pounds and became pregnant January, 1916. Full-term male child Oct., 1916.

CONCLUSIONS.

1. Operative procedures alone give a small percentage of successes.
2. Operative procedures sometimes add a troublesome pathological condition of the genital organs to the symptom-complex of dysmenorrhea and sterility.
3. The only intelligent method of studying the activity of the spermatozoa is in their relation to the female secretions.
4. Ductless gland therapy is at present in its embryonal stage. While the writer fully appreciates the dangers of the indefiniteness of this therapy, he does feel after careful consideration of a series of cases, of which those quoted are a type, that further experience with endocrines will tend to clarify our present position in regard to the treatment of dysmenorrhea and sterility.

13 East Sixty-fifth Street.

A REPORT OF THE WORK OF THE DETENTION HOME FOR WOMEN.*

BY

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In the year now ended we have had most interesting experiences in the management of a Detention Home for Women in Omaha. The work has been interesting from three points of view, *i.e.*, the social, political and the scientific.

As a study in sociology we learned that we were dealing with a class of individuals that might well be termed social derelicts. There was an occasional girl of good education who earnestly desired to be cured of her ailment and who could be depended upon to at least make some effort to reform her habits, but the great majority of inmates were seasoned prostitutes with a low grade of mentality and absolutely devoid of all moral responsibility. Our first location was in a beautiful home with spacious wooded grounds, but we had difficulty in detaining the inmates so we moved to the county jail building where the work was better controlled and the environment more to their liking. They seemed to be more content in the jail than in a home. The overhead expense in maintaining the home was not great because all the domestic work including cooking, laundry and house-cleaning was done by the inmates and most of the work of the medical staff was gratuitous.

Our most perplexing problem was in relation to the morphine and cocaine habitues. More than half the inmates were addicted to one or both of these drugs. We handled these cases as best we could by starting them on the minimum dose that would keep them within self-control and gradually reduced the dosage until they were entirely free.

The political aspect of the work was annoying and at times most embarrassing. It is to be remembered that the women brought into the home have an economic value in the underworld and their detention worked a hardship upon commercialized vice. Hence efforts were repeatedly made to obtain their release. The police were not overenthusiastic in arresting and detaining these women, the police court was none too friendly disposed, many of our local politicians high in office openly opposed the institution, and a part of the city press championed their cause by running headlines from day to day. The stories appearing in the newspapers were usually interviews with prostitutes who attacked the home and its management in the most scandalous manner. Happily we were most ably and courageously supported by the Commissioner of Police, the Chief of Police and the Commissioner of Health and such organizations as the Welfare Board, Ministerial Union and Women's Club gave us valiant support. However, had it not been for the backing of the military organizations in Fort Omaha and Fort Crook, it would have been quite impossible to "keep the home fires burning," as evidenced by the fact that as soon as the armistice was signed the work came all but to a standstill. We continued with the cases then in hand, but few new cases were committed to the home. An effort was made to have our State Legislature pass a law that would allow us to continue the work but the law that was finally passed declared venereal diseases to be contagious, communicable and quarantinable, but made no provision for enforcing examinations or treatment. This left us in the air for a time, but we now have an ordinance passed by the city council that will permit us to proceed with the treatment of these cases and not only with women but with men as well.

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* Read at a meeting of the American Gynecological Society, Atlantic City, June 16, 1919.

The scientific part of our work was most satisfactory. Our organization consisted of a medical director, a bacteriologist, a serologist, two trained nurses and several senior medical student assistants.

A Wassermann test was made of every case on admission and successive daily smears were taken from the vagina, cervix, and urethra in all cases.

The complement fixation test for gonorrhea was made on 109 cases. Parke-Davis antigen was used. In other respects the regular Wassermann technic, using anti-sheep amboceptor, was employed.

Sixty cases (55 per cent.) gave positive results. All of these were chronic. Some of them were in the active stage of the disease, showing large numbers of gonococci in both urethra and cervix, but these cases were probably acute exacerbations of a chronic condition.

Thirty-four cases or 31.2 per cent., gave negative results but were proven to be gonorrheal. They were chronic and the disease was not active, organisms being very difficult to find.

Seven or 6.4 per cent. of the 109 cases examined were acute and gave negative complement fixation reactions.

In eight cases or 7.2 per cent., a negative complement fixation was obtained and no gonococci were found upon repeated smears from urethra, vaginal walls, and cervix.

Only one patient in this series showed symptoms of arthritis and in this case the complement fixation test was positive.

Out of a total of 275 cases admitted to the home only 8 were found gonococci free and in this very small number in which no gonococci could be found there was usually found some clinical evidence of a previous infection.

Dr. C. C. Tomlinson, in charge of syphilitic cases, reports that approximately 70 per cent. of all cases showed a positive Wassermann and only 7 per cent. of the total number showed clinical evidences of syphilis. The Wassermann survey was as follows:

4 + Wassermann	30 per cent.
3 + Wassermann	13 per cent.
2 + Wassermann	14.5 per cent.
1 + Wassermann	5 per cent.

In a total of thirty-seven cases with Wassermann 4+ or 3+ on admission the average number of days required to reduce the Wassermann to 2+ or below was forty-one days. The average number of salvarsan injections were 3.33. Cases were paroled when the Wassermann was reduced to 2+ and no luetic lesions were found. They were required to return at frequent intervals for further observation and treatment.

Accurate daily records were kept of all cases. Daily smears were taken from the urethra, cervix and vagina. A plain methylene blue and a Gram stain were made from smears taken from each of these locations.

The order of procedure for diagnosis and treatment of cases was as follows: On admission, a general physical examination was made and the findings recorded. Smears were taken from the urethra, cervix and vagina and blood secured for a Wassermann test. After taking the smears the urethra was injected with 3 per cent. protargol and the cervix with 7½ per cent. tr. iodine. It was found that the smears taken in the first examination were positive in 30 per cent. of cases but in the second, third or as late as the fifth successive daily examination, gonococci were found in one or more of these locations (urethra, cervix, vagina) in 96 per cent. of all cases examined.

In the early weeks of our experience we would dismiss a case if after three successive daily examinations negative smears and a negative Wassermann were found but we learned from syphilitic cases in which negative smears were found on three successive days that by persevering we were able to demonstrate the gonococci on the fifth, the eighth and in a single case after the fifteenth day of negative findings. With such perseverance on the part of a trained bacteriologist (Dr. Meyers, of the University of Nebraska) what is to be said of the usual office examinations when but a single smear is commonly made and that by a clinical man of meager laboratory training? The gonococcus was first found in the smears of the first examination in 30 per cent. of cases, in the second day in 22 per cent., in the third day in 11 per cent., in the fourth day in 6 per cent., in the fifth day in 4 per cent., in the eighth day in 2.5 per cent. and in the tenth day in 2 per cent.

In the treatment of these cases we tried no innovations but we did find encouragement and acquired added confidence in our methods as the work progressed.

Each case was required to take two daily vaginal antiseptic douches and all cases were treated daily except Sundays and holidays and while menstruating. For urethral infections we relied upon massage and injections of a 3 per cent. protargol solution alternating weekly with 1 per cent. silver nitrate. It was thought that we obtained better results by alternating these solutions from week to week. For cervical infections we injected 7½ per cent. tr. iodine the length of the cervical canal, using a metal syringe with a small curved cannula attached.

For leukorrheal discharges, we seldom failed to clean up all discharges within two weeks by packing the vagina daily with Fuller's earth, removing the same in six to eight hours with vaginal douches.

Cases would be paroled to return in from one to three times a week for observation and treatment when they reached 2+ Wassermann and when they had from eight to ten daily negative smears. The average time to accomplish this was ten weeks. Later we introduced the gas machine thinking it would shorten the period of detention. We would give gas to several cases daily, each case going under the gas about once a week. By this means we were able to dilate the cervix and swab the uterus with formalin followed by tr. iodine. The results were most gratifying. Cases that had resisted the usual forms of treatment as outlined above responded promptly and our records show that we reduced the period of detention from an average of ten weeks to from four to six weeks —a net gain of at least 50 per cent. in time. The greatest number of treatments given under gas anesthesia was three. One and seldom more than two treatments were required. Where pus tubes were present we were unable to clean up the leukorrheal discharges with Fuller's earth and it was seldom possible to obtain negative smears. In such cases, the tubes were removed and thereafter results from our treatment were readily obtained.

The tubes were found enlarged or tender in only 2 per cent. of all cases. When we consider that 90 per cent. of the inmates were seasoned prostitutes ('hard boils', as they call themselves) it is surprising that the tubes are infected in so small a percentage of cases.

In four cases we had the combination of gonorrhea, syphilis, drug addiction and pregnancy. In the cases of pregnancy with syphilis no exception was made in the treatment of syphilis. Two miscarried and one continued to term with negative findings in the blood of the baby. No effort was made to treat gonorrhea associated with pregnancy except to give vaginal douches and urethral injections until the end of the puerperium.

CONCLUSIONS.

Following are the points of special interest gained in our observations in the management of these cases:

1. More than half the cases were drug addicts and all were social derelicts. As a moral problem the work was most discouraging.
2. It is doubtful if the public is as yet ready for this reform movement. Public sentiment is as yet not crystallized, but much has been accomplished in educating the public and there is no doubt that the Public Health Service will perform an inestimable service in continuing the propaganda that has been so effectively pursued in the past year.
3. In a total of 275 cases admitted to the institution all but eight were gonorrheic, 70 per cent., were also syphilitic though only one in ten showed any clinical evidence of syphilis.
4. The complement fixation test for gonorrhea was of no practical value.
5. A single negative smear has no significance. In only 30 per cent. of the cases, which ultimately revealed the gonococcus, was the organism found in the first examination and in isolated cases the gonococcus was not revealed until the eighth, tenth and in one instance the fifteenth successive daily examination.
6. We were impressed with the low percentage of tubal infections in our chronic cases. In only 2 per cent. did the tubes reveal any evidence of infection in the clinical examinations.

7. Gas anesthesia, permitting the cervix to be dilated and the endometrium to be swabbed with formalin and iodine solutions shortened the period of detention about 50 per cent. The average period of detention had been ten weeks but with the aid of gas anesthesia we shortened the period of detention from four to six weeks.

670 BRANDEIS THEATRE BUILDING.

PSEUDOMYXOMA PERITONEII.*

BY

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PREVIOUS to 1884 a number of reports had been published describing a peculiar condition affecting the peritoneal cavity, characterized by the presence of a gelatinous material which covered the surface of the intestines, caused adhesions, and usually progressed to an unfavorable termination. Werth in 1884 collected these, at that time unclassified cases, described a case of his own, and proposed to designate them under the title of 'pseudomyxoma peritoneii.' Since then but scant literature has appeared upon this interesting subject, and what has appeared have been in large part contributions by pathologists in an endeavor to explain the etiology and pathology. The clinical aspects, however, have received still less attention, the modern text-books upon gynecology giving it slight consideration. Inasmuch as the condition is not an uncommon one, it would seem that it should be given greater prominence than it has thus far received.

Pseudomyxoma peritoneii presents a rather constant clinical and pathological picture, although the exact etiological factors that produce the peritoneal changes are still more or less in dispute. There is general agreement, however, that practically all cases result from the contact upon the peritoneum of the colloid contents of ruptured pseudomucinous cysts.

There are three principal theories which have been proposed to account for this effect of the pseudomucin of these cysts upon the peritoneum. The first holds that it causes a chronic productive inflammation associated with myxomatous degeneration. The second is the implantation theory which views the pathology as a result of implantation upon the peritoneum of cells derived from the ruptured cyst wall. The third theory regards the process solely as a reactive peritonitis produced by the mechanical and chemical effect of the unabsorbable colloid material.

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* Read at a meeting of the American Gynecological Association, Atlantic City, June 14–17, 1919.

The first theory, holding that myxomatous degeneration follows a productive peritonitis, was proposed by Wendler. It was also later supported by Fraenkel, but to-day it seems to find no adherents. The implantation theory has a number of advocates. Thus Ewing considers pseudomyxoma peritoneii to be "a form of diffuse implantation tumor arising from mucinous ovarian cancer in which an originally carcinomatous process becomes greatly altered by an inflammatory process about masses of mucin." Kaufman, while agreeing on the implantation, does not regard the condition as malignant but states that "many ovarian tumors, even when benign, can metastasize in the abdominal cavity." Pfanenstiel, Olshausen and Fraenkel also accepted this view. Clinically, there would seem to be much in support of this theory, although the microscope does not afford conclusive evidence in favor of such a view. For the third theory, that of productive inflammation, both the gross and microscopic pathology give support. Werth in his original article was the first to describe the condition as an inflammatory productive peritonitis. Warthin, too, considers it to be a reactive process resulting in a proliferation. MacCallum takes the same view and believes that the colloid material becomes more or less organized and thus stimulates the outgrowth of granulation tissue. At the present time the theory that pseudomyxoma peritoneii is a productive inflammation would seem to be the most tenable. Clinically, further weight is lent to this view by the fact that a number of cases presenting a similar clinical and pathologic picture have been described as occurring in men. In these instances the source of the trouble was a ruptured hydrops of the appendix which contained a pseudomucin corresponding to the colloid material found in cysts. Merkel and Hueter both describe such cases.

The gross appearance of an abdominal cavity presenting pseudomyxoma peritoneii is characteristic. The entire peritoneal cavity with all its organs may be involved or the process may be more or less limited by adhesions. In an abdomen extensively affected almost every stage of the process may be observed. Early the peritoneal surfaces show the result of mechanical irritation. They are reddened and are seen to be covered by a layer of colloid material in variable thickness. Surfaces in contact become adherent and organization taking place, these surfaces become still more intimately and firmly united. In cases of long standing the union that results is so firm that it does not admit of separation. The partition between the lumen of adjacent coils of intestines becomes so completely blended that the identity of the two intestinal walls is lost. Great thickening of involved surfaces occurs as a result of the cell infiltration. Collections of colloid material may be found encysted anywhere in the abdomen, but more commonly in the lower portion and pelvis. The size and number of these collections vary. They are walled by thickened peritoneal surfaces which have lost all the characteristics of peritoneum. In appearance these surfaces resemble granulation tissue and like such they bleed easily. The collections of colloid material vary in color from a straw to a dark amber. The consistency also varies but is most commonly jelly-like and can only be removed by the hands. It has a peculiar tenacity which causes it to adhere to any surface with which it comes in contact. In all respects it has the same characteristics as the contents of the original cyst in which it had its origin. The intestine not involved is usually dilated as a result of the partial obstructions produced by the contracted walls and angulations occurring in the affected portions.

The microscopic pathology is essentially that of a proliferative process. Ewing describes a round-celled infiltration with great proliferation of the endothelial cells. He believes that colloid material penetrates into the peritoneal lymphatics distending and rupturing them. It is this feature that gives the picture of a myxomatous degeneration. Warthin explains the resemblance to myxomatous tissue in a slightly different way. According to his view, there is a proliferation of fibroblasts and an outgrowth of capillaries into the colloid masses. A framework is thus developed which embraces in its meshes the colloid material. The microscopic picture is for the most part to be considered as a chronic productive inflammation. As it progresses it involves the intestinal wall destroying the elastic fibers. This latter is important in explaining the frequency with which intestinal fistulæ develop in such cases. It is to be noted that cells, such as are found in the cyst wall, are not identified in any of these studies. Fraenkel, however, in 1901 described a case and reports the result of his autopsy studies. He found the same new vessel formation with the colloid material held in mesh by new formed connective tissue. He also found on the ascending colon a cyst lined by columnar epithelium which he believed to be a true metastatic formation. His conclusions from these studies were that pseudomyxoma peritoneii is the result of an implantation of cells, and that they cause a degeneration of the peritoneum into myxomatous tissue. It would seem, however, that Fraenkel's conclusions are incorrect, for whether the condition be an implantation process or not, the peritoneal changes do not constitute a true myxomatous degeneration. Furthermore, in the cases seen resulting from rupture of a hydrops of the appendix identical peritoneal pathology is seen. The cases reported by Merkel and Hueter have already been referred to. Dr. Chas. A. Bentz, of the Pathological Department of the Buffalo Medical School, has kindly furnished autopsy notes of two such cases of ruptured hydrops of the appendix. One occurred in a young man, twenty-one years of age, and the other a woman of seventy-nine. In both instances the gross and microscopic appearance of the peritoneum was in every respect similar to cases arising from ruptured cysts. Such cases tend to disprove the implantation theory and to argue strongly for a productive peritonitis produced by mechanical and chemical irritation.

While it appears that the views as to the actual pathology are pretty well established, there has seemed to have been no discussion as to whether or not the involved peritoneal surfaces really secrete a pseudomucin. The original encysted collections are easily explained by the dissemination of the cyst fluid throughout the abdomen with the formation of adhesions walling it off. So, too, recurring pelvic collections after operation can be accounted for by secreting portions of the cyst wall remaining behind. Certain instances are seen, however, where it would appear that the peritoneal surfaces really secrete this pseudomucin. This is easily explained if we accept the implantation theory. Viewing the process solely as a productive peritonitis, it is difficult to explain satisfactorily in what way these surfaces become the source of the pseudomucin. Apparently further study on this question should be undertaken.

The clinical history of pseudomyxoma peritoneii is fairly constant. It is far more common in women, occurring as a result of a ruptured pseudomucinous cyst. When seen in men a hydrops of the appendix has been the cause. Age probably has no etiological importance except in its relationship to the presence of the cyst. The majority of cases reported have been in women over forty. Werth in his article reports a case in a woman of twenty-six. The condition takes its origin at the time of the rupture of the cyst. The history previous to this time is dependent upon the presence of the cyst. The rupture probably takes place slowly due to gradual distention and the myxomatous degeneration of the thin cyst wall. Because of its thick tenacious character, dissemination of the cyst contents through the abdominal cavity is probably slow. In the cases reported no history indicating the time of the cyst rupture was mentioned. Dull pain, pelvic and abdominal discomfort usually exists for a variable time previous to the enlargement of the abdomen. As the condition develops, pain and digestive disturbances are prominent complaints. There is loss of weight very early, it is progressive, and late in the disease it may be extreme. Tumor sooner or later is always present. It may be in the form of general abdominal enlargement with enormous quantity of fluid, but more commonly there are irregular cystic tumors. These cystic collections are not tense but easily fluctuating and not painful to manipulation. The growth of these cystic collections is rapid, the patient noting from week to week the increase. It is at this time usually that surgery is suggested. The woman is found ill-nourished and anemic. Blood studies on these patients have not been reported. In one case of the writer's there was a leukocytosis of moderate degree. The pathology easily accounts for the clinical features. The normal intestinal physiology must necessarily be greatly impaired by the inflammatory thickening that takes place in the intestinal walls.

The findings at operation are familiar. The removal of the cyst sac is always difficult and in some instances impossible. Adhesions may not admit of separation without the danger of tearing a thickened friable intestine. Following operation there is a period of some relief. Soon, however, there is pain and often within a few months or even weeks cystic enlargements again appear. These may be evacuated only to refill. The condition usually progresses steadily and the patient dies with the picture of malignancy. It is not uncommon to have in the later weeks intestinal fistulæ as occurred in one of the writer's cases. Sinuses discharging pseudomucin have also been reported.

The diagnosis of pseudomyxoma peritoneii may in some cases be made with reasonable certainty. The dull pain, with rapid and irregular enlargement of the abdomen is suggestive. The encysted collections are usually flaccid and give a distinct fluctuation even though the pseudomucin be very thick. There will always be evidence of a pelvic collection which is diffused. In addition to the physical signs, the loss of weight and general appearance of the woman weigh strongly in arriving at a diagnosis.

The prognosis is usually unfavorable. The course of the disease is essentially one of malignancy. With a process reasonably localized, or if by early operation after rupture, the cyst and its contents can be completely removed, recovery may be hoped for.

Certain it is that early surgery is the only hope. Unfortunately the early stage is not associated with great pain, and when relief is sought the condition has progressed to an advanced stage. Most of these patients undergo several operations for the relief of collections of fluid and at each operation the intestines are found more thickened and the adhesions more dense. These patients may die of sepsis, but more commonly death results from a gradual wasting not infrequently complicated by intestinal fistulæ or sinuses discharging the colloid material. Obstruction of the bowel is not as common a terminal event as might be expected, doubtless due to the fact that the intestinal adhesions are formed slowly. The duration of the fatal cases is from one to three years.

Treatment is only palliative in advanced cases. The cystic collections may be temporarily relieved by surgery. In one case of the writer's a few months after the first operation a second was done and following this the abdomen was exposed to the *x*-ray in the hopes that the process might be stayed. The treatment was carried on at the State Institute for the Study of Cancer. Apparently the treatment had no effect. Possibly earlier it might have been useful and it would seem that in such cases it might be tried.

CONCLUSIONS.

Pseudomyxoma peritoneii is due to the reaction of the peritoneum to pseudomucin. The pathology consists of a proliferative inflammation of the peritoneum with the organization of colloid material on the peritoneal surfaces. In the majority of cases it is a progressive process and results fatally.

1248 MAIN STREET.

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RUPTURE OF THE DEEP EPIGASTRIC ARTERY AS A CLINICAL ENTITY, WITH AN ANALYSIS OF A CASE.*

BY

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THE rupture of an artery, whether traumatic or the result of disease of the vessel walls, is ordinarily followed by the general and local phenomena accompanying hemorrhage. In the case of certain vessels, however, there develops a well defined and distinctive chain of events, due either to the anemia created in certain tissues, or, more commonly, to the pressure exerted by the growing hematoma upon contiguous structures. The definite symptom complex following rupture of the middle cerebral artery may be instanced as the most common and striking example of such cycle.

Traumatic rupture of the deep epigastric artery, though of infrequent occurrence may be followed by so complex and yet so definite a series of sequelæ that, as will be shown by the case history about to be presented, the pathological and diagnostic details may properly be grouped as a clinical entity, reasonably sure to present after the occurrence of such accident.

The history of the case which drew my attention to this matter is as follows:

The patient, Mrs. H. W., was referred to me by my colleague Dr. A. C. Morgan, and was admitted to Frankford Hospital, March 22, 1918. She had borne seven children, had always been of robust physique, and at the time of admission was forty-four years of age. The family history was in no way relevant nor had there been any previous illness of account. Menstrual and sexual history was uneventful, though all of the labors had been difficult and instrumental.

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* Read at the annual meeting of the American Gynecological Society, June 17, 1917.

During her last pregnancy in 1916 the patient sustained an injury, striking the edge of an open door heavily with the right side of the abdomen. Severe pain and disability followed this accident, but the symptoms disappeared within a few days and the incident passed from her memory. There remained, however, occasional attacks of pain in the right side, and following the birth of the child, there was manifest a distinct mass in the right lower quadrant of the abdomen.

Within three months there developed ascites, marked edema of the lower extremities beginning with the right and dyspnea, with a persistence of the abdominal pain.

Shortly before admission she had been tapped six times at ten day intervals, a considerable amount of ascitic fluid being withdrawn at each paracentisis. Examination revealed a large obese adult, with marked dyspnea. The eyes reacted normally to light and accommodation, the teeth were good, the tongue clean. The heart sounds were rapid and sharp, the muscular element good, no murmurs. The lungs were negative (Dr. Morgan).

The abdomen was markedly distended and pendulous, dull on percussion, the dulness movable with change of position of the patient. A large, tender mass was distinctly palpable in the right iliac fossa, apparently arising from deep in the abdominal wall, which was throughout boggy and edematous. There was prominent edema of both legs.

On vaginal examination there were found no abnormalities of the pelvic structures, nor could the mass be distinguished, except as it was pushed down by the abdominal hand.

The urine averaged 1020 in specific gravity, there was a trace of albumin, no glucose or casts, and an abundant excretion of urea.

The hemoglobin was 80 per cent., red blood cells 5,030,000, leukocytes 9400. Systolic blood pressure 138. Wassermann reaction was negative.

A provisional diagnosis of some rapidly growing form of generalized malignant disease, as, for example, sarcoma invading the entire peritoneum, was made and on April 1, 1918 the abdomen was incised in the median line, under local anesthesia. The abdominal parietes were swollen and edematous averaging 9 inches in thickness. Proper exploration being impossible under these conditions, a silver catheter was introduced into the general peritoneal cavity through the small incision, and was secured in place. Drainage of ascitic fluid was most profuse and after one week abdominal section was performed. By this time the abdominal walls had regained their normal thickness of 1½ inches, the dyspnea had disappeared, and the edema of the legs was greatly reduced.

Upon exploration of the abdominal cavity, all the viscera appeared normal, there being no signs of any malignant change, nor was there any evidence of hepatic cirrhosis.

The parietal peritoneum under the right lower abdominal quadrant was stretched over a large tumor mass, springing evidently from the thickness of the abdominal wall. There was marked ecchymosis under the right peritoneum.

On incising the mass from without it was found to consist of a huge old hematoma lying within the substance of the rectus muscle and overflowing into the contiguous structures, limited below by Poupart's ligament. When the clot, débris, etc., had been removed, the torn end of the deep epigastric artery was plainly seen, lying on the rectus sheath, the muscular fibers having been dissected away from the vessel by the force of the hemorrhage. The large cavity was cleaned and lightly packed with gauze and the incision closed leaving gauze drainage. The cavity rapidly filled up and in three weeks complete union had occurred, the hematoma site having disappeared. The patient returned to her home in good health and there was no return whatsoever of the ascites or edema.

Analysis of the foregoing case history leads to the inevitable conclusion that the pressure of an enormous mass of blood clot within the right abdominal wall led, first to edema of the right leg, followed by the involvement of the left and later by general ascites.

To explain the anatomical sequence in detail, my colleague, Dr. Benjamin Lipschütz, demonstrator of anatomy at Jefferson Medical College, was called into consultation. His report is as follows: "The presence of an enormous hematoma limited to the dorsal sheath of the rectus abdominis muscle if unrelieved for a certain period of time, would, undoubtedly produce a direct pressure on the adjacent veins and lymphatics, and thus cause a mechanical obstruction, interfering with the normal venous and lymphatic return. Local venous obstruction is well illustrated in the so-called milk leg. The hematoma if sufficiently extensive would result in pressure on the external iliac vein with a typical chain of events, edema of the lower extremity, extensive unilateral edema of the abdominal wall and dilation of the superficial veins of the abdomen and thigh. Pressure limited to the smaller veins, *e.g.*, deep epigastric, deep circumflex iliac and pubic veins, would easily be compensated and would not explain the series of phenomena that occurred in this case. Furthermore, the pressure on the external iliac vein would probably result with an interference of the normal venous return of the internal iliac system of veins and thus produce some stasis in the common iliac vein. This latter factor coupled with the continued pressure of the hematoma upon the peritoneum and producing an overactivity of its mesothelial cells, can account for the concomitant ascites. The attempt to establish a collateral circulation is also a factor in producing some stasis."

In conclusion it may be said, that, though of infrequent occurrence, the deep epigastric artery may be ruptured by violence of comparatively insignificant degree, and that when a history of traumatism to the abdominal wall is followed by the development of a tumefaction within the abdominal parietes and secondarily by the presence of ascites and edema of the lower extremities, primary rupture of the deep epigastric should be carefully considered in formulating a diagnosis.

A somewhat cursory search of the literature yielded but one report of a case of this accident, a summary of which is appended.

Emerson reports the only comparable case so far as the knowledge of the writer extends. (*Jour. Amer. Med. Assoc.*, vol. lxx, No. 16, 1918, p. 145.)

A white woman of forty-two, a para-iv, with seven miscarriages, had jumped up a few inches from the floor, while trying to adjust a curtain rod. She was seized with a sudden, severe pain in the lower left abdomen, had fallen to the floor and there fainted. She suffered from shock and collapse, but was stimulated until reaction set in. On admission to the hospital, the patient was nauseated, pale and presented a diffuse swelling, extremely tender and painful over the left lower abdominal quadrant. Temperature 99.6 degrees, pulse 100, leukocytes 13,400), urine normal.

The condition improved under rest and stimulation and eight days after the injury, there presented a well-marked tumor of the abdominal wall. A tentative diagnosis of direct abdominal hernia was made and operation performed. Upon incision of the tumor mass a large blood clot containing about two cupfuls was found under the deep fascia and between it and the pritoneum, which was deeply bloodstained. The severed ends of the deep epigastric artery were easily demonstrated lying on the peritoneum. It had been torn about midway between Poupart's ligament and its entrance into the lower portion of the rectus sheath.

Both ends of the artery were ligated, although active bleeding had long since ceased, and the incision closed with drainage. Convalescence was uneventful. The Wassermann reaction was persistently negative.

124 SOUTH EIGHTEENTH STREET.

DELIVERY BY THE NATURAL PASSAGES FOLLOWING CESAREAN SECTION.

BY

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IN the AMERICAN JOURNAL OF OBSTETRICS for April, 1916, the writer(1) reported two personal cases and quoted thirty-seven others from the literature of delivery by the natural passages following Cesarean section. The personal cases were subjected to natural labor following a previous Cesarean only after the results of animal experimentation carried out by the writer in conjunction with Dr. Mason(2) had demonstrated that in cats and guinea-pigs a Cesarean scar would withstand any strain which could be borne by the uterine muscle.

Since 1916 additional knowledge of the healing of Cesarean scars has resulted from the researches of Williams, Spalding, Losee and others. Williams(3), in the study of fifty uteri removed at Cesarean section, included ten in which the scar of a previous Cesarean was present. In eight of these it was difficult to distinguish the scar by the naked eye, and histological examination showed regeneration of the muscle fibers with no fibrous tissue scar. In another specimen there was marked thinness of the scar but the cicatrix consisted only of regenerated muscle fibers. In the tenth case the scar had been imperfect and rupture had occurred.

Spalding(4) studied histologically four Cesarean scars and found all thinned and more or less defective. He believes that a sac of membranes enters the depression in a thinned cicatrix and acts in a similar manner to the bag of fore waters in dilating the cervix, thus eventually causing rupture.

Losee(5) studied twenty Cesarean scars removed at the New York Lying-in Hospital, among which there were nine completely or partially ruptured. He also observed that in a perfectly healed scar the muscle is regenerated and no scar tissue is to be found. When infection takes place, however, the cut edges become infiltrated with leukocytes and serum and more or less necrosis of the musculature occurs and union takes place by fibrous tissue formation without regeneration, at least to a normal degree, of the muscle fibers.

Mason(6) reported nineteen previously unrecorded cases of vaginal delivery following Cesarean section, for the most part collected from the personal experience of various Boston physicians. None of these scars ruptured.

On the other hand the writer must admit that a considerable number of cases of ruptured Cesarean scars have appeared in the literature. Findley(7) collected and tabulated sixty-three such cases up to 1916, and since his article additional cases have been reported by Bell(8), Rongy(9), DeCourey(10) two cases, Howson(11) and Novak(12).

The writer wishes to report his further experience with delivery by the natural passages following Cesarean section. He is obliged to confess that this is limited because the number of cases in which an indication for Cesarean might be present in one pregnancy and not in a subsequent one is necessarily small. It is of course confined to such examples as placenta previa, eclampsia, inertia uteri, contraction ring, abnormal presentations in the primipara, etc. Out of a considerable number of cases referred to the writer for possible selection of natural labor in preference to a repeated Cesarean only a very small number have been suitable for delivery by vagina, as the true mechanical indications for Cesarean necessarily persist in successive pregnancies.

The subsequent history of the two cases previously reported is of interest.

CASE I.—Mrs. J. S. This was the case in which a Cesarean section was done in the first pregnancy for undilatable contraction ring, by a general surgeon after failure of forceps. Normal pelvis. Two years later she was delivered normally of a 7½-pound baby. Since the first communication she has been delivered by normal labor two times more, the babies weighing respectively 9¼ and 10¼ pounds. After the first normal delivery the placenta adhered to the scar and was removed manually. The scar was found to be somewhat thinned at the upper extremity but in spite of this gave no trouble in labor. The placenta was again retained after the second normal delivery but only by contraction of the cervix. The third normal delivery was absolutely without incident.

CASE II, of previous article, Mrs. I. L., was delivered by Cesarean section in the first labor for a relative indication: slightly contracted pelvis of justo-minor type, inadequate pains, and exhaustion. In the second labor the pains were more satisfactory and delivery was effected by high forceps. Both babies were the same weight 6½ pounds. Her subsequent history is as follows: Two years later she miscarried at six months. A year following this she delivered herself normally of a 5-pound baby, and the next year again miscarried at seven months of a 3½-pound baby, all without any trouble with her Cesarean scar.

The following additional cases are here reported for the first time.

Mrs. G. F. L. In 1914 delivered by Dr. E. P. Starbird of Dorchester by Cesarean section for a dermoid cyst of the ovary obstructing delivery. Normal pelvis. Mar. 17, 1918, after eight hours of labor the os was fully dilated and the fetal head well in the pelvis, so she was delivered of an O. D. P. by Scanzoni's maneuver. The baby weighed 7 pounds 6 ounces. A slight depression could be felt on the surface of the uterus through the abdominal wall, presumably at the site of the Cesarean scar but labor and convalescence were without untoward incident.

Mrs. J. E. D. First labor terminated by high forceps. Baby died on sixth day of intracranial hemorrhage. Second pregnancy terminated by Cesarean section at the hands of another obstetrician. In her third pregnancy the patient consulted the writer and, as her pelvis was of normal size, she was allowed to go into labor which terminated normally without incident, the baby weighing 7½ pounds.

In this connection the history of another case which, although not delivered by the natural passages, was subjected to the test of labor with a Cesarean scar in her uterus is of interest.

Mrs. R. C. This patient had been twice delivered by Cesarean section, the first time after failure of the test of labor, and the second by election. The pelvis was slightly justo-minor. At the patient's earnest request she was again allowed the test of labor in her third pregnancy. After four and one-half hours labor the os was fully dilated and the membranes were then ruptured, but after two hours of second stage pains the head did not descend so the patient was finally delivered by Cesarean section. The scar of the former Cesarean was found to be intact in spite of the strain to which it had been subjected.

Dr. Sylvester J. Goodman(13) of Columbus, Ohio, has very kindly given me permission to report three of his personal cases of delivery by the natural passages following Cesarean section.

CASE I.—Para-iv seen by Dr. Goodman in consultation with Dr. Appleman of Columbus. She had had two normal births in Europe. The third pregnancy terminated by Cesarean section in New York after a long labor, exact indication unknown. Measurements: anteroposterior 21 cm., spines 23 cm., crests 27 cm., trochanters 33 cm. The fourth time she was allowed to go into labor by advice of Dr. Goodman and she delivered herself without difficulty.

CASE II.—Primipara, placenta previa centralis. Seen by Dr. Goodman in consultation with Drs. McClure and Baldwin of Columbus. Cesarean section by Dr. Goodman. Eighteen months later delivered by Dr. McClure of 8½-pound baby without complications.

CASE III.—Seen by Dr. Goodman in consultation with Dr. Stevenson of Columbus. Cesarean section for eclampsia fourteen months previously in Cleveland. Measurements, anteroposterior 19, spines 22, crests 24. Delivered normally of 9-pound child.

It is not the writer's purpose in reporting these few cases to enter into an academic discussion of the healing of Cesarean scars, but rather to consider the practical aspects of the subsequent handling of patients once subjected to Cesarean section. In his previous paper the writer stated his opinion that where a uterus had been sutured with care and there had been no subsequent sepsis the Cesarean scar would be strong enough to withstand the distention of a full-term pregnancy or even the strain of labor itself.

J. Whitridge Williams (3) says: "The evidence at our disposal indicates that healing of Cesarean section wounds is generally satisfactory provided convalescence has been normal and ordinarily does not call for a repetition of this procedure unless definitely indicated by extreme disproportion or some other condition. In patients in whom the convalescence has been abnormal it is probable that the cicatrix has been greatly thinned out. In such cases Cesarean section may be indicated for the express purprose of avoiding a subsequent rupture."

Palmer Findley(7) concludes "that in view of the evidence that not more than 2 per cent. of ruptures occur in subsequent labors, we are not justified in voicing the slogan 'once a Cesarean, always a Cesarean,' neither are we to rely implicitly upon the integrity of the uterine scar in any case."

Novak(12), of Baltimore, says "On the other hand, nothing in the case shakes in any way the position held by most obstetricians that the management of Cesarean patients in subsequent pregnancies should not be too strongly influenced by the fact that rupture of the uterus occurs in a small proportion of the patients, probably not exceeding 2 or 3 per cent."

Having then definite authority for allowing certain patients to go into labor after having been delivered previously by Cesarean section, it remains to formulate certain rules for the delivery of such patients.

What patients may be allowed to go into labor with the expectation of delivery by the natural passages? First, those in whom the indication for Cesarean no longer exists, where the operation was done for eclampsia, placenta previa, abnormal presentations, undilatable contraction ring, inertia uteri, etc.

It makes no difference whether or not one agrees that these conditions are indications for Cesarean section. The fact is that Cesarean is frequently performed for these indications, and the patients again become pregnant and the question of how such women are to be delivered must be decided. The writer believes as a result of his personal experience, experimental study and review of the literature that these patients may be delivered by the natural passages with safety.

Second, those in whom the Cesarean has once been performed for a relative indication after the test of labor has demonstrated failure of the natural forces. Cases are occasionally seen where after one or more Cesareans for definite reasons a rapid normal labor occurs either because of a smaller fetus, better uterine contractions or both. In cases of this nature the patient may be allowed to choose between a repeated Cesarean and the test of labor, realizing that Cesarean may be necessary after all.

When the definite indication for Cesarean persists in repeated pregnancies, as it does in most cases, humanity requires that the patient shall not be subjected to needless suffering by being allowed to go into labor which can accomplish nothing but should be delivered by Cesarean section in advance of labor. Where there has been sepsis following the previous Cesarean there is always reason to suspect the integrity of the scar and such cases should also have elective Cesarean section.

What precautions shall be taken in the management of labor following Cesarean section? First, in the technic of the original operation. Every uterus should be sutured as though the operator expected the patient to go into natural labor in the next pregnancy. Perfect approximation of the uterine incision is the aim to be attained. It does not make any essential difference whether one layer of sutures or three are inserted. The important thing is to approximate the entire thickness of the uterine wall. The inner fibers have a tendency to retract beneath the outer fibers and if particular care is not given to including all the layers of the uterine wall the result will be a thinned and weak scar even if it heals cleanly. Attention must be paid to keeping up cervical drainage for if the uterus fills up with blood and clot, the pressure may force this material between the edges of the incision and hinder perfect healing. It is superfluous to speak of asepsis in this connection.

When it has been definitely decided that the patient may be allowed to go into labor following a previous Cesarean, arrangements should be made for her to enter a hospital at the beginning of labor and equipment, instruments, and a competent operative personnel for possible abdominal interference should be accessible. Pituitary extract in such cases has been used without ill effect, but it is probably safer to resort to forceps if delivery does not progress with reasonable speed. Version is likewise probably less safe than forceps.

CONCLUSIONS.

1. Sufficient evidence has accumulated to justify the conclusion that the presence of a Cesarean scar in the uterus is not sufficient reason for repeated Cesarean section in the absence of any other indication.
2. Cases delivered by Cesarean section for a temporary indication (eclampsia, placenta previa, inertia uteri, abnormal presentations, etc.) may be delivered by normal labor with safety if the scar has healed without sepsis.
3. Such cases should however be delivered in a hospital where equipment for abdominal section is accessible if needed.

4. All Cesarean wounds should be approximated with the greatest care, in order that a firm scar may be obtained and such a scar is in all probability equal in strength to any part of the uterine wall.

483 BEACON STREET.

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CAN LABOR BE FACILITATED BY A SPECIFIC DIET OF THE MOTHER DURING PREGNANCY? *

BY

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THIS question was answered by the writer, promptly and rather emphatically, in the negative when recently asked by a patient for that diet list "which keeps the baby small and makes labor so much easier." The patient was more than surprised by the answer "since all her friends in Chicago had been kept on a restricted diet."

It was this incident which prompted the writer to look up Prochownik's original article, published in 1889, in which a dietary is recommended "for the purpose of avoiding the necessity of artificial premature labor," and then to search through literature for further enlightenment on this important question. Necessarily this study could not be limited to a perusal of the scanty and inconclusive literature specifically dealing with the Prochownik diet itself, but had to include the many contributions to closely related problems, such as the relation of the fetal to the maternal metabolism, placental physiology, or the influence of ethnologic, hereditary, social and other factors on the development of the fetus.

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* Read by title at a meeting of the American Gynecological Society, Atlantic City, June 14–17, 1919.

The ultimate result of this search through the literature can be easily summarized in two facts: The answer given to the patient, in general, is justified, and probably is correct. This answer, however, does not coincide with the opinion of the majority of American authors of text-books of obstetrics.

PREVALENT VIEWS.

Quoting from a number of the best-known works (in alphabetic order of their respective authors) we meet the following views:

E. P. Davis: Diminution in the mother's food is not followed by corresponding diminution in the size of the fetus, because the fetus is a parasite and persists in thriving at the expense of the mother. Prochownik and others have obtained different results by modifying the diet of the mother. This method of limiting the size of the fetus is the result of the most thorough investigation which has yet occurred in the subject and is deserving of attention.

De Lee states (page 226): "Special rules govern the diet of women, who have contracted pelves." Later (page 715) when describing the Prochownik diet, he expresses his personal opinion as follows: Prochownik hoped to restrain the growth of the child and also to retard the ossification of its bones so that it would mold easier through the pelvis. "My few experiences with it have been absolutely negative, and, indeed, daily observations in other cases, for example, tuberculosis, carcinoma, hyperemesis gravidarum, show that the nutrition of the mother has little effect on the growth of the child which is, in fact, a parasite."

Edgar: The principle of regulating the diet of the pregnant woman for the purpose of preventing overgrowth or retarding full development on the part of the fetus, and thereby favoring eutocia, has been carried out in a limited way for a number of generations, yet this topic is hardly mentioned in the great majority of text-books. Edgar quotes in detail the summary of Prochownik's second paper (published in 1901) and then gives his personal views as follows: "The large proportion of nitrogenous food and the small quantities of fluid of this diet undoubtedly favor toxemia. I was confronted with this difficulty in a generally contracted pelvis, and in spite of the free exhibition of calomel and colon irrigation I was compelled to abandon the diet, and to induce labor at the thirty-eighth week." Edgar does not state his experience in other cases, and while discussing the problem very thoroughly does not actually recommend the diet.

Hirst: He feels that an excessive amount of food in pregnancy has its disadvantages, quoting the case of a woman who took 2 quarts of milk daily and gave birth to a baby weighing 11¾ pounds. After regulated diet in next pregnancy a child was born weighing 7½ pounds. In a footnote he gives Prochownik's diet.

Manton, in Peterson's Practice of Obstetrics describes this diet and adds: "In many instances this or a similar diet may be employed with advantage, and living children delivered with little or no inconvenience."

Paddock in "Maternitas" (a popular book for mothers) writes: "A special diet is sometimes ordered in cases where, in previous pregnancies, the child had been abnormally large."

John Osborn Polak: "Diet has a decided influence on the size of the child. Adherence to Prochownik's diet will result in a small fetus, in which the plasticity of the cranial vault is increased."

Reynolds and Newell, as may be emphasized, are the only American authors who do not even mention this diet.

Reed in a recently published text-book for nurses: "In contracted pelves it is sometimes desired to furnish a special diet (of Prochownik) with the idea of controlling the size of the child, but this is an emergency."

Shears states on page 56: "Prochownik has advised a special diet for certain cases of pelvic contraction, which will be discussed in its appropriate place." A careful search through the book, however, fails to show any other reference, favorable or unfavorable, to this diet.

Webster simply mentions the fact that Prochownik urges that women with contracted pelves be subjected to a specific diet.

Williams discusses the question more fully: "In slight degrees of pelvic contraction, or in patients who have previously given birth to excessively heavy children, a restricted diet may be advisable during the last two or three months, as I have already shown that the larger size of the children in the well-to-do classes is in great part attributable to the life of ease and the abundance of food enjoyed by the mothers." He asserts definitely that the Prochownik diet, a diet poor in carbohydrates and fluids, exerts considerable influence in lessening the weight of the child without otherwise affecting it, and emphasizes that these conclusions are in marked contrast to those usually held by the laity, who erroneously believe that abstention from *protein food* is the essential point. It may be mentioned in this connection that this same fact also is pointed out by other writers, *e.g.*, Reed: "Certain books on maternity, designed for popular reading, advocate diets that are supposed, by depriving the child of lime salts, to keep its bones soft and make the labor easy. If it succeeds, the child will be injuriously affected. If it does not succeed, the claim is false."

In the *Journal* of the American Medical Association (vol. lxvii, p. 1543, 1916, Nov. 16) a query concerning "a diet to keep the size of the child reduced" is answered in a noncommittal form: "Prochownik, whose observations were confirmed by Noel Paton and Reed (should be Reeb!) recommended the following diet, etc., etc." "It is stated that this procedure has rendered labor in some cases distinctly easier." How interested the practitioner is in this problem can be deduced from the fact that this same query concerning the Prochownik diet appears again in the *Journal* of the American Medical Association of March 2, 1918.

This very general interest in and rather generous support of Prochownik's idea by a number of American text-book writers evidently is not shared by continental authors.

Among the better known English works no mention is made of such a diet by Eden, Galabin, Jardine, Johnstone, Tweedy and Wrench, Wright, not even in the recently published "Midwifery by Ten Teachers," edited by Berkeley. Only David Berry Hart, without comment, quotes (p. 683) Prochownik and Paton, and somewhere else in his book (p. 143) states "If a woman overeats and takes little exercise, she is apt to have a big, flabby child, adding to the difficulties of her labor without any compensating benefit."

The only French works consulted, those of Ribemont, Dessaignes and Lepage, and of Wallich do not refer to the possibility of influencing fetal growth by means of a special diet.

Still more interesting is a study of the books of German authors; Prochownik being a gynecologist of the well-known Eppendorf Hospital in Hamburg. No reference to this question can be found in the text-books of Bumm, Olshausen and Veit, Runge, Schauta, and Zweifel. Ahlfeld alone discusses Prochownik's suggestion (edition of 1898!). He feels that the simple reduction in fat of the new-born (it must be emphasized here, that, indeed, this is all Prochownik ever claimed for his method) would be of no practical importance for the obstetrician, who obviously could be interested only in a diet that could result in a retardation of bone growth and of the process of ossification. Ahlfeld is not convinced of the reliability of a few reports concerning good results and in general agrees with a view expressed by Bumm to the effect that Prochownik's diet as a whole is nothing else but a reducing or starvation diet, since it furnishes but 2000 calories per day, while the requirements for the average pregnant woman surely amount to approximately 2600 calories.

Ludwig Fraenkel in Liepmann's large "Handbuch der Frauenheilkunde" (vol. iii, p. 173), surveys some of the literature on a special diet suggested by Prochownik "who thought that he can by it influence the size of the child." Fraenkel's personal results were most contradictory. While he felt in some instances that he was successful, in others he surely failed completely. In general he is inclined to agree with Bondi, a rather vigorous opponent of the diet, as will be shown later.

CLINICAL OBSERVATIONS.

While not complete, the preceding quotations from recognized text-books will suffice to prove a striking contrast between the opinions of American and continental authors. It, therefore, becomes necessary to study the original sources of their information, clinical observations and statistics demonstrating the results obtained with the Prochownik diet.

When Prochownik, in 1889, first proposed a specific diet for patients with minor pelvic contractions he was not aware of the fact that similar suggestions had been made by several writers as early as the end of the eighteenth century. By the experience gained with *three* patients he felt justified in recommending for the last six weeks of pregnancy a diet poor in liquids and carbohydrates and rich in proteins, in general resembling the diet usually prescribed for diabetic patients. The results obtained in these three cases to him seemed most satisfactory. The three children showed no evidence of having been harmed by the changed and restricted food supply of their mothers, and exhibited all the characteristics of full maturity. They were of average length with normal skeletons, all bones apparently as hard as normally seen. Striking in some of these children was only the obvious deficiency in fat tissue. He gained the definite impression that with the beginning of the restriction of the carbohydrates in the diet, at least in some cases, all further fat growth in the fetus had ceased and thus the fetal weight had become stationary. Readily acknowledging that the head dimensions were found normal, the skull bones of normal hardness, Prochownik offered the following explanation for his observation, that in these three instances labors subsequent to the diet seemed easier in comparison with preceding ones: *A striking thinness and slackness of the skin covering the head, due to the absence of fat tissue, increases the mobility of the skull bones against each other, facilitates molding, and thus permits an unusual degree of compression of the head during labor.*

This particular interpretation of the favorable effect on labor of a diet poor in carbohydrates and water and rich in proteins, is original with Prochownik. This same explanation once more is very explicitly set forth by him in a second paper published in 1901, a final summary of all personal experience and of all records in literature up to that time. This fact requires strong emphasis because, with but few exceptions, both the mere believers in the efficacy of such a diet and also the enthusiastic advocates of the Prochownik dietary, commit the grave and misleading error of variously stating that Prochownik succeeded in reducing the size of the fetus or of the fetal head, or retarded ossification in skull bones by a specific diet. It will be shown later, how even most serious experimental investigations of the complex problem of fetal metabolism incorrectly have been interpreted as supporting such a claim of Prochownik which, as a matter of fact, he has never made.

It seems unnecessary for the purpose of this paper to describe in detail this dietary. Its characteristics are an increase in the proteins to replace the required reduction in the carbohydrates and a reduced intake of water. Occasional suggestions for minor changes made by some writers (Brehm, Eichhorst, Lahmann, etc.) can be disregarded. While Prochownik advised to limit this diet to the last six weeks of pregnancy, others advocated its beginning much earlier. While Prochownik employed this method only in a few carefully selected patients with slight pelvic contractions or with histories of preceding difficult labors, some practitioners of obstetrics seem to use this diet in their private practice without any discrimination, as a sort of routine more in the form of a mere fad.

It is a fact that medical literature does not contain a single record of an extensive or systematic study of this subject made on a large series of cases either in a clinic or a hospital. The care exhibited by Prochownik and his immediate followers in the selection of suitable cases is very evident, since Prochownik's final critical analysis of the efficacy of such a diet is based on but twenty-six labors in seventeen patients, observed by him in the course of more than twelve years, and on a total of thirty-six labors in thirty-one patients reported in literature from 1889 to 1901. In considering the literature from 1901 to the present day it seems noteworthy that practically no records of clinical value have appeared in these past eighteen years. In a review of the literature on the subject Schaeffer (in 1902) cites Horn: one case, considered satisfactory although the child's weight was 4100 grams. Bokelman (in 1901) felt that such a diet represents a good routine since it cannot do any harm. When challenged in a discussion to give definite case illustrations, he refused, and limited himself to the assertion that an experience of eight years had convinced him that this diet facilitates labor. In 1904 Hoffmann reported one case, a primipara delivered with forceps of a child weighing 3050 grams after the mother had been kept on a restricted diet for more than three months. The convincing proof for the splendid effect of the diet in preventing fat growth, in the author's opinion, was clearly established by the sole fact that the infant began to gain in weight immediately after birth, this proving the existing deficiency in fats. Lomer (in 1908) concluded from observations made on four patients with normal pelves that the diet surely has a good psychic effect. The patients kept more active, and he assumed that in every case the child was born 1 pound lighter in weight than could have been expected without this diet. Bondi (in 1913) employed the diet in seven cases, obtaining five complete and evident failures. Fraenkel (in 1915) as already mentioned, found his personal results most contradictory. While he felt that he possibly had succeeded in some cases, the complete failure in others was quite evident. He, like many of the preceding writers, among them Schaeffer, Bondi, etc., realized that the question of influencing labor by dieting the pregnant mother, is one that cannot be settled by mere" impressions," but will have to be solved definitely by exact statistics obtained from a large series of cases, which up to that time (1914) had not been produced, and, as may be added, have not been furnished since.

This represents the sum total of all clinical contributions directly dealing with the efficacy of the Prochownik diet, a literature decidedly mediocre in character, and of limited scientific value with the sole exception of Prochownik's second paper. Clearly the assertion. is justified, that the *clinical observations* as recorded in medical literature during the past twenty-nine years, furnish no valid basis for either the recommendation of such a dietary in text-books or its extensive employment in practice.

EXPERIMENTS ON ANIMALS.

While it seems fair to assume that most of the present defenders of the Prochownik diet do not know from personal investigation how scant and inconclusive the clinical literature on this subject really is, it must, on the other hand, be acknowledged that some of them at least believe that the expediency of Prochownik's idea has been securely confirmed by experimental investigations on animals. The two experimenters most commonly referred to are Noel Paton and Reeb.

An exact study of the influence of diet during pregnancy on the weight of the child is unsatisfactory, if not actually impossible, in the human subject. Outside of obvious external difficulties in accurate observation during a long period of time, many unavoidable disturbing factors, such as digestive disorders or other functional derangements, are apt to come into play. Our ignorance concerning the actual duration of pregnancy in the human does not need to be emphasized. Therefore, there is added the impossibility of determining whether the seemingly diminished size of the child possibly is only the result of less complete development on account of prematurity of labor. Starvation tends to cause premature termination of pregnancy, a point which will be further discussed later on. In view of such evident difficulties in the study of pregnant women, more conclusive results were expected from investigations on pregnant animals.

Paton experimented with guinea-pigs and came to the conclusion that the size of the offspring depends very directly on the diet and state of nutrition of the mother animal during pregnancy. "*The maternal tissues are taking precedence over the nutrition of the fetus.*" "Were this not the case" he argues "we should find that in badly nourished mothers the proportionate weight of the young would be greater than in well-nourished mothers. This actually is the reverse of what occurs. The mother passes on to the fetus only the surplus, and the better the nutrition of the maternal tissues, the greater is the growth of the young in the uterus."

Reeb later criticized Paton's experiments as too superficial, since he had failed to include into his calculations a possible paternal influence on the growth of the offspring. Reeb, therefore, experimented with rabbits, observing successive pregnancies of the same female fertilized by the same male. His conclusions were as follows: In case of undernourishment of the mother the total weight of the entire litter is always below that in a good state of nutrition. The loss of weight is chiefly (to the extent of 62 per cent.) due to deficiency in fat, but the rest is caused by defective general development. He felt that these experiments tend to support Prochownik's contention "though they do not necessarily prove anything for the human fetus."

Marshall agrees with Paton that the size of the offspring may be markedly diminished by restricting the food of the pregnant animal, but emphasizes that "many exceptions to this rule are found, unless the restriction of food has been severe enough to actually jeopardize the life of the mother." Marshall offers other valid arguments against Paton's contention, that the mother takes precedence over the fetus: When in pregnant rabbits the glycogen of the body is reduced to mere traces by injection of phloridzin, the placenta and the fetus still contain considerable amounts of it (Lockhead and Cramer). In this instance at least then "the needs of the fetus have taken precedence over the storage of a carbohydrate reserve for the mother."

Fetzer is another investigator who claimed that his experiments have established the scientific justification for Prochownik's diet. He studied, on rabbits, the influence of a diet excessively rich, or markedly deficient, in iron, a substance essential for the development of the fetus. He found that without exception the iron contents of the fetus finally corresponded exactly to those of the mother.

This cannot be surprising, in the opinion of Bondi, because the fetus obviously in its requirements is limited to the materials supplied by the mother. The fetus will participate in the abundance of certain chemical constituents and will suffer from the abnormal scarcity of essential substances in the mother. Landsberg, indeed, still goes further and suggests that Fetzer has actually misinterpreted his own experiments. Even in the case of most extreme iron scantiness the fetus still contains some iron. This really only proves that the fetus does attempt to obtain its supply even if the mother shows actual deficiency. Obviously the mother will succeed in retaining the minimum indispensable for the maintenance of her life. That the fetus under these conditions finally succumbs, however, can hardly be surprising since surely it is the less resistant of the two. Fetzer's experiments, in Landsberg's opinion, really prove what now is generally believed, "*that the fetus takes precedence over the mother*," that it will take from her whatever it requires, and can be prevented from doing it only by a marked deficiency of that particular substance in the maternal organism. The investigations of Bondi clearly support such a view. Both in extremely emaciated women (*e.g.*, in cases of hyperemesis, etc)., and in animals, poisoned with phloridzin, the fat contents of placenta and fetal liver remain at their normal level. "The fetal abstraction of nutritive material from the mother proceeds entirely independent from the nutritive condition of the mother."

Evvard's investigations may be quoted in this connection: He added meat meal, containing about 60 per cent. of proteins, to the basal ration of corn, fed to pigs. In every case this changed diet resulted in pigs which were larger boned and stronger. The results with sheep were approximately the same, though not as well pronounced. We shall refrain from even suggesting that these experiments could be interpreted as rather disproving the rationale of Prochownik's diet which, like Evvard's experiments, substitutes an abundance of proteins for the restricted carbohydrates. These experiments, if correct, only show what is admitted, that diet to a certain extent possibly influences the weight of the offspring but solely by transmitting to the fetus an increased amount of such substances which are supplied to, or are existing in the maternal organism in abnormal amounts. Such experiments or observations, however, as will be shown later in detail, prove nothing in the problem of retarding fetal development by partial starvation of the mother.

In the light of the investigations of Marshall, Cramer, Landsberg, Bondi, and of many others it seems difficult, if not impossible, to adhere to the opinion that the earlier experiments of Paton, Reeb, or Fetzer are furnishing "scientific" proof for the value of Prochownik's diet.

MODERN BIOLOGIC VIEWS.

Advocates of the Prochownik diet seem to overlook the fact that these earlier experimenters were defending a theory, now obsolete, to the effect that during pregnancy in the absorption of nutritive material the mother takes strict precedence over the fetus. Modern views concerning the biologic relation of fetus to mother are diametrically opposite. These views recently have been so very lucidly set forth by Murlin in a study of the metabolism of mother and offspring that a few quotations culled from this most noteworthy paper become indispensable in an attempt to combat the superstitious belief in the value of a specific diet during pregnancy.

Any adequate comprehension of the metabolic relationship between the mammalian mother and her offspring presupposes a broad view of the whole subject of reproduction. The viewpoint of the general physiologist and naturalist regarding reproduction, since Weissman's great work, has been this: The germ cells or reproductive elements are not, strictly speaking, produced by the adult body; the adult body is produced and reproduced by the germ cells as a medium in which the specific stock can be perpetuated. Seen from this angle reproduction becomes the whole end and aim of life. As has been said by Hatschek: "All the cells of the body stand at the service of the germ cells because in them is perpetuated their own being." The student of reproduction in man may easily lose sight of these broad, fundamental principles. It was for this reason, in Murlin's opinion, that until a few years ago the mammalian ovum was regarded as nothing more than a maternal cell, just as much at the mercy of the maternal circulation as any other cell of the body.

Partly through the cytologic observation of Boveri, Haecker, Hegner, and others who have demonstrated the independence of the germinal path from one generation to the next in various lower forms of life, and partly through the embryologic studies of Hubrecht, von Spee, Peters, Hitschmann and Lindenthal, Bryce and Teacher, Herzog, and Johnstone, who have directed attention to the details of the process of implantation of the ovum in the uterine wall, it has gradually been proved that the ovum never is a true body cell but is, to a large extent, an independent organism, capable even in the face of difficulties, of looking out for its own nourishment at every step of its development. Upon fertilization the processes of assimilation in the ovum receive a fresh impetus, the proteolytic and proteosynthetic changes receive from the sperm cell an activating effect, and the result is further growth at the expense of whatever materials the ovum comes in contact with. It is evident that the process of implantation from the standpoint of the embryo is simply a continuation of the proteolysis by which it lays claim to its nutriment. "The cells of the fertilized ovum are hungry and they possess the means of satisfying their hunger."

When placental formation is finished, the question arises, first asked by Harvey: Does the placenta act by a sort of digestion, or in a purely mechanical manner. Murlin cites in detail some of the latest evidences and considerations which must be taken into account in making a decision whether the fetus for a time surrenders control over its nutrition to the mother. Truly diffusible substances, like glucose and urea, readily pass the placenta. There is no proof extant at the present time that fat either is or is not taken up by the placenta. We can say with certainty only that it does not pass readily through the villi if it passes at all, and that it is never present in the same concentration in the fetal blood as in the maternal—but still this is not inconsistent with the vitalistic theory of a digestive placental function. How the proteins pass the placenta is the most important question of all. That amino-acids can readily find their way through the chorion has now been definitely proved, and recent investigations favor the idea that proteins are modified by the placenta. The transport of iron from mother to fetus cannot be accounted for on mechanistic grounds.

One is obliged, writes Murlin, to conclude from the weight of evidence at present that there is much more to be said in favor of the vitalistic digestive conception than the mechanistic of placental function. The very existence of this barrier between these two bloods would seem to imply the necessity, at the borderline, of a process of naturalization by specific enzyme action on all materials which are used in the actual construction of the fetal tissues. Materials used only as a source of energy need not be so modified.

An understanding of the nutritive relations of mother and fetus will facilitate an appreciation of the actual fetal substance requirements. Stated in terms of the different combinations of protein building stones, necessary to set up a new human organism, the requirements for fetal growth are enormous. Stated solely in quantitative terms, the substance requirements are not large.

Can the mother supply all of the building materials from her food, or must she perforce supply some structural elements, chemically speaking, from her own body? Is gestation in the mammals, in this sense, to any degree a sacrifice of the individual for the good of the species (as undeniably is true for some lower orders of animals in which the young, before being hatched or fully developed, consume the maternal body)?

An increased katabolism in the mother early in pregnancy, temporarily creating a negative balance, has been established by various investigators. This deficit is explained by Murlin as the result of excessive excretion of nitrogenous bodies incident to unrestricted action of the proteolytic enzymes of the fetal trophoderm. There is, in his opinion, overwhelming evidence that the fetus is producing these enzymes for its own use regardless of its effect on the mother. If the mother makes a prompt reaction, the period of heightened katabolism will be of short duration, and of no serious consequence to the mother. When the net result of metabolic changes for the mother during a normal pregnancy is counted up, as has been done in a few instances (Landsberg), the total retention of nitrogen is found to exceed the requirements of the fetus, uterus, placenta, membranes and mammary glands by a very handsome amount. This accords with the experience of a large percentage of mothers who find themselves physically much better off at the end of a normal gestation than at the beginning. This apparent benefit to her own body is brought about through the stimulus of the fetus itself.

The story of nitrogen retention may be repeated with some variations for other chemical elements, phosphorus, sulphur, calcium, magnesium. Hoeffstrom's splendid work, which shows a substantial gain for each element except calcium, in Murlin's belief, may be truly said to demonstrate that, so far from being a sacrifice of the individual for the good of the species, gestation normally may be looked upon as a means employed by the species for the good of the individual mother.

Murlin in conclusion strongly emphasizes this modern conception of the independence of the fetus. The enzymes which enable it to secure material for its own nourishment from the mother are really a part of the mechanism of heredity. After producing the ovum the mother has no further influence on the hereditary factors. The enzymes of the embryo, however, can act only on certain proteins—the proteins of its own species. After the initial period, which may well be called one of parasitism, the new and the old organism become accommodated to each other, and enjoy a period of "harmonious symbiosis." The maternal metabolism has become nicely adapted to the physiologic alterations due to pregnancy, and the fetus with all its adnexa asks for no more in the way of energy than does the same weight of maternal tissue.

Stated more briefly the modern physiologist and naturalist regards the germ cell as an individual organism and not a maternal body cell. The process of fertilization in this cell activates and stimulates an anabolistic proteosynthetic function. Probably by means of chorionic enzymes the embryo secures the building materials necessary for its immediate growth and full development. The embryo's power of assimilating its required nutriment from the maternal tissues with which it has come into intimate contact, is essential in its biologic aim and purpose of perpetuating the species. The germ cell is not a truly maternal cell and therefore, unlike other body cells is not at the mercy of maternal circulation and general metabolism.

Present-day teachings of the physiologist and indisputable facts of biogenesis leave to the obstetrician no ground to hope that he can influence markedly the development of the fetus by changing the mother's diet during pregnancy.

In the light of the foregoing quotations in might be considered superfluous to advance further arguments against the claim of some writers that the Prochownik diet is based on scientific principles. However, it is the aim of the writer to present in this paper in compact form all the available material which will permit a well considered and fair answer to the question asked in its title.

Studying the amino-acid nitrogen of the blood in pregnant and nonpregnant women, Morse found no difference in the normal ranges of variation. This proves that fetal requirements during pregnancy do not cause an increase of these substances in the maternal blood out of which protein is constructed. On the other hand, he discovered that in about 70 per cent. of the cases the fetal blood contains a slightly larger amount of amino-acid nitrogen than the maternal. This higher level in the fetus prevents acceptance of simple diffusion or transition as the explanation of placental function and strongly supports the idea of active absorptive properties on the part of the placenta (vitalistic function).

Although, dealing in particular with the problem of skeletal growth, which will be considered later in this paper, also the investigations of Hart, Steenbock and Fuller may be mentioned in this connection.

There is an idea current among cattle raisers that a high mineral content in the food rations will cause excessive skeletal formation in the fetus, and consequent difficulties at its birth. Theoretically such an idea seemed absurd to these investigators. In view of the general specificity and uniformity of composition and structure exhibited by the normal products of cellular and glandular activity in the animal organism, and in view of the fact that many ingested substances fail to transverse the placenta directly, it might be expected that diet, as long as it is abundant enough, could exert but a slight modifying effect on the fetus. Indeed, these facts tend to prove a selective action on the part of the placenta with a definite control of the mineral contents of the fetus. But "assumptions in nutrition problems are dangerous" and, therefore, these experimenters tested carefully the effect of a high lime intake by the mother animal on the skeletal development of the fetus. They were unable to influence such development and concluded: The size of the fetal skeleton is fixed by germ plasm and controlled by heredity, and is hardly subject to modification even by the liberal supply of any one substance to the pregnant mother.

The various investigations concerning the calcium contents of blood as made by Haldane, Meigs and Blatherwick, Lyman and others, and concerning blood sugar carried out by Henderson and others, all, without exception, establish a remarkable constancy of circulating blood in its chemical makeup under varying conditions within wide physiologic and pathologic ranges. "There exists a most effective regulatory mechanism which maintains a definite stability and fixity in the composition of the blood." This element of regulation is an outstanding feature of biologic phenomena. It surely must be regarded a strong argument against any theory assuming a formative influence on the fetus *in utero* effected by diet changes.

SOCIAL FACTORS.

Much has been made by the advocates of the Prochownik diet of the observations that the average weight of the new-born children of the well-to-do mothers is greater than that of the poorer class, or that in maternity hospitals this same difference can be observed in favor of the infants born by mothers who have stayed in the hospital some time before confinement as compared with those born by patients who have entered the hospital just before or during labor (Pinard and Bachimont, Bouchacourt, Bernson, Bordé, Peller, Riggs, etc.). Prochownik himself was aware of this fact and quoted in his paper interesting observations reported many years ago by factory inspectors in Switzerland. There, since 1877, pregnant women by law were prevented from working during the last two weeks of pregnancy. Statistics showed that since this law had gone into effect the average birth weight of infants of factory workers had increased by 300 grams. Granted that all these observations are correct, though this has been denied by some investigators (*e.g.*, Starcke), still an attempt to interpret them as proving the reasonableness and efficacy of a starvation diet is both illogical and unscientific. This fact has been pointed out by many writers for the past twenty years and more. The difference between the pregnant women of the rich and poor class, between the women staying in the hospital before confinement and those admitted during labor, is not solely a difference of nutritional conditions. Discussing Peller's interesting and serious investigations into the influence of social factors on the development of the fetus, Bondi emphasized that such social factors are not simply of an economic nature limited to the problems of food and rest, but that among the the upper classes, obviously the important elements of more careful selection of the mate, of a more important rôle of hereditary influence, etc., are tending toward the production of a bigger and better developed child. Still more complex become the factors influencing birth weight if we consider the mothers kept in hospitals prior to labor. Many of these women are thus, at least temporarily, protected against the undeniably injurious and deleterious effect on the fetus of certain occupations (*e.g.*, tobacco or lead workers); a good number among them have sought admission to the hospital on account of pathologic conditions which without attention would have caused premature labor; some of them at least came to the hospital on account of discomforts caused by the very fact that the fetus was of abnormal size (Vaccari, Fuchs, Jacoby), the number of those to whom entrance into the hospital means protection from starvation, in proportion probably is small. But most important of all, our ignorance concerning the actual duration of pregnancy, the impossibility of determining slight prematurity and the possibility of actual overcarrying practically precludes an intelligent interpretation of statistics of mere birth weight in regard to the numerous known and unknown factors determining this weight. When Koopman studied the question of the probable date of labor he arrived at the interesting observation that patients admitted to the hospital early in pregnancy as compared with those admitted immediately before or during labor, showed a striking tendency to go over the date calculated from their last menstruation. It is illogical and unjustified to disregard all factors with the exception of nutrition in order to prove the scientific basis of the Prochownik diet. How queer the results of such one-sided statistical investigations of the "social" element may become is well illustrated by a study of Goldfeld. Correctly assuming that the father must also have something to do with the somatic development of the fetus, he studied the relation of the size of the new-born infant to the occupation of the father, tabulating eighteen different professions and occupations. He found the children of school teachers leading among all of them. They were 346 grams heavier and 1.18 cm. longer than those of day laborers. This surely does not prove the social-economic condition at least of the father a very potent factor.

Most elaborate and painstaking investigations were carried out by Robertson. He discovered that infants of English descent born in South Australia weigh at birth from 8 to 10 ounces more than infants born in Great Britain. They also are from 5 to 6 ounces heavier at birth than infants of English parents born in the eastern parts of the United States. He concludes that this increase in the average birth weight must be ascribed to the evolution of the Australian people under the influence of changed climatic, social and economic conditions. Among these influences he lays particular stress on the fact that in Australia food is relatively cheaper and better, and economic conditions so much better. Women of the laboring and unskilled artisan classes in Australia, as a rule, are enabled to confine their physical activities to the management of their household and families. "It may be conceived" Robertson writes, "that these conditions have an appreciable prenatal effect on the growth of the child, since Pinard has shown that the rest and improved nutrition of hospital life cause a notable increase in the new-born's weight, and Prochownik has shown that the size of a child at birth may be reduced by restricting the diet of the mother." In the light of all that has been said in this paper and particularly in view of Robertson's absolute reliance on the efficacy of the Prochownik diet it seems obvious that the interpretation he offers for his otherwise very interesting observations, necessarily is of limited value, if not actually incorrect.

That a life of ease and inactivity tends to delay the onset of labor is not as well established a fact as that overwork surely favors the premature termination of pregnancy. It seems interesting and worthy of special emphasis that the very same report of the factory inspectors of Switzerland recording the satisfactory increase in the average birth weight also records the gratifying result of this splendid law in reducing markedly the number of premature labors, a point which vitiates or actually negatives the value of this report or of similar observations in hospitals in the arguments of the advocates of a specific pregnancy diet. Incidentally the fact may be mentioned in this connection that various experimenters observed a tendency to abortion as the result of starvation of the mother animals.

The studies of Winckel and others concerning giant growth of the new-born have shown beyond any reasonable doubt the importance of an abnormal duration of pregnancy, of actual overcarrying as the deciding etiologic factor. Oyamada, investigating the same problem emphasized that among the largest infants recorded in literature we find a child weighing at birth 6336 grams born of a tuberculous mother (Brother), another weighing 13½ pounds of a diabetic woman (Maygrier). A recent personal observation may be briefly mentioned in this connection.

Mrs. J. J., Jr. (Record No. 2650), twenty-three years old, consulted me Oct. 14, 1918. Always menstruated very regularly, 28-day intervals. Last menstruation began May 9th. Pregnant uterus is found reaching almost to navel. Urine (never before examined) contains large amount of fermenting sugar. At once patient is placed on sugar-free diet. Under careful food restrictions urine occasionally becomes sugar free, but in spite of very rigid diet sugar often reappears. From December 20th to Jan. 9th, 1919 patient is kept in Barnes Hospital for metabolic study. Starting with a diet of approximately 900 calories, gradually increasing to 2300 calories just before discharge from hospital, the blood sugar rises from 0.66 to 0.98. The urine in meantime remains free of sugar but contains a considerable amount of diacetic acid. Body weight, on admission 135 pounds, during observation falls to 132 pounds (and four weeks after confinement is 117½ pounds. Patient, on March 6, 1919 is delivered of a female child, weighing 4915 grams. The unusual size of this child, in spite of excessive starvation of the mother continued during a long period of time, most plausibly is explained by an abnormal duration of pregnancy, birth occurring 301 days after the first day of her last menstruation. The absolute rest required by the miserable general condition of the patient probably delayed the onset of labor.

Better social and economic conditions apparently do result in an increase of the average birth weight (Smith). This possibly in part is actually due to better nutrition and possibly, as will be shown later, to overeating. In the light of our present knowledge, however, as the more potent causative factors of this phenomenon must be regarded the following: Earlier marriages, an increased number of children in each family with the normal and physiologic increase of birth weight of each subsequent child of the same parents, a marked reduction in the number of premature labors by improved prenatal care, possibly an increase in the number of actually overcarried children, more careful selection of the mate, a consequently more prevalent beneficial influence of heredity, and probably still other factors as yet not fully understood. Therefore, it is not logical to deduce that increased birth weight under better prenatal conditions proves the efficacy of the Prochownik diet on fetal growth.

FACTORS DETERMINING FETAL DEVELOPMENT.

Huebner offers the following list of etiologic factors which either presumably or actually, as definitely proved, influence or determine fetal growth: Race, constitution of both parents, general nutritional condition of mother, heredity, age of mother, pluriparity, early puberty of mother, sex of child, and duration of pregnancy.

These etiologic factors can be divided into three groups. The first group, including early puberty of mother, age of mother, sex of child and pluriparity, for obvious reasons, does not call for special consideration within the scope of this paper.

The second group, comprising the nutritional condition of the mother and duration of pregnancy, has been amply discussed in the preceding pages.

The remaining third group, representing the influences of race, heredity and constitution of the parents, at first thought would seem as irrelevant in our particular problems as the factors of the first group. No authorities need to be quoted to confirm the assertion that in our present state of knowledge we believe that hereditary factors, probably by way of endocrine gland activity both in mother and fetus, under normal conditions determine general skeletal growth. Nevertheless, as recently pointed out by Davenport, there still exists a tendency to ascribe idiosyncracies of stature to the influence of external conditions, including food. How superficial such conclusions are, he exemplifies by the occasional assertion that the superior stature of the residents of Kentucky is caused by the high lime contents of the soil. Careful investigations, however, leave no doubt that the particular tallness, *e.g.*, of the people of Lexington is entirely due to the fact that a large proportion of them are of Scotch descent. The inhabitants of Scotland County, North Carolina, where there is practically no lime in the soil, are even taller than those of Lexington, simply because they are the direct descendants of the Scotch Cape Fear River immigrants. Davenport deduces that such experiences suggest strongly that internal constitutional factors are more important than the ordinary environment differences. The comparative lack of dependence of growth on quantity or quality of food is shown by the indisputable fact that a bantam chick, in spite of persistent overfeeding, never develops into anything but a bantam fowl, and, it may be added, nobody as yet has claimed to have turned a normal chick into a bantam fowl by means of food restrictions. Or, once more quoting Hart, Steenbock and Fuller: "The size of the fetal skeleton is fixed by germ plasm and controlled by heredity."

However, in spite of such evidence, apparently conclusive, some of the advocates of the Prochownik régimé persist in maintaining that general skeletal growth of the fetus, or the ossification process, is retarded or actually arrested by certain diet changes of the pregnant mother. But they will have to admit that such an assumed influence could be of importance in the mechanism of labor solely in so far as it would particularly affect the skull. Unfortunately anthropologic literature fails to give any definite information at what stage of development the skull in its shape and size begins to exhibit racial characteristics and whether these features are already noticeable at birth. According to Fassbender, as quoted by Frank, the skull of the newborn in its general configuration resembles more closely the head of the mother, and only later exhibits the signs of a paternal influence. In the opinion of Skalkowsky this also holds true for the heads of infants born somewhat prematurely.

The thorough investigations of Budin and Ribemont establish a relation of fetal length and weight to the circumference of the head (which expresses its size more accurately than certain diameters). But these writers also prove that this relation is not proportionate, and that in the course of fetal development a large increase in length results only in a comparatively small further enlargement of the head. Kjoelseth pointed out how often even in a thin, prematurely born child the head shows normal size and the skull bones normal consistency. Every experienced obstetrician, who occasionally resorts to artificial premature labor in dealing with slight degrees of pelvic contraction, will readily confirm this observation. Of still greater interest in this connection are certain facts established by the studies of Frank. His figures, presented in a paper dealing with the characteristics of full maturity, show this same disproportion in the increase of length and weight as compared with the increase of head circumference. They also show that with a gain in length and weight of the fetus, the circumference of the shoulders gradually gains over the circumference of the head, so that finally in infants over 48 centimeters long, the circumference of the shoulder, as a rule, is found two centimeters longer than that of the head. This fact, well known to the obstetrician, is due to the rapid accumulation of adipose tissue during the last few weeks of pregnancy. Obviously more fat is deposited in the skin covering arms and shoulders than in the skin of the skull which is notoriously poor in fat. The fetal weight increase near the end of gestation is chiefly caused by the development of adipose tissue and not by skeletal growth. Lack of proper appreciation of this fact may well explain some of the illogical and inaccurate conclusions of the defenders of the Prochownik diet. Unfortunately the obstetrician habitually signifies the size of the newborn child by its weight, *i.e.*, in pounds, instead of inches. This inaccuracy inevitably leads him to the erroneous conception that the heavier child has the larger head, or inversely that the lighter child has the smaller head. His object in dieting the mother is to secure an undernourished, thinner, child, in fact, however, it is only the shorter child with the smaller skeleton that can be expected to have a smaller skull.

The prevailing custom of using the terms weight and size promiscuously when speaking of the newborn is objectionable. This inaccuracy of expression probably has a great deal to do with the astonishing phenomenon that advocates of the Prochownik diet persist in believing that Prochownik successfully reduced the size of the infant by retarding its skeletal growth through diet changes.

CONCLUSIONS.

It seems desirable to begin this final summary with a restatement of Prochownik's actual claims: Infants born by mothers, kept on this diet, show all the signs of normal maturity. They are of average length, with normal skeletons, all bones showing normal hardness. This holds true for the skull bones. All head dimensions are normal. Striking is only a deficiency in fat tissue. The skin covering the head is thin and slack, due to the absence of fat. "This peculiar condition of the skin increases the mobility of the skull bones against each other, facilitates moulding, and thus permits an unusual degree of compression of the head during labor."

This is all Prochownik ever claimed for his diet—and as shown in the first part of this paper—clinical evidence to prove even this moderate claim is not extant.

It was next shown that animal experiments, properly arranged and properly interpreted, do not furnish any scientific basis for the rationale of the Prochownik diet.

The assumption of defenders of this diet that fetal development could be noticeably influenced or actually retarded by food restrictions, is incompatible with present biologic knowledge. The fertilized ovum is not a maternal body cell, necessarily subject to maternal metabolism, but an individual organism. The placenta is not merely a passive mechanic filter but an organ endowed with an active vitalistic function, which promptly and reliably supplies the fetus with all the substances essential for its development, as long as they are available in the materinal organism. The evident beneficial influence of certain social economic factors on the average of birth-weight is grossly misinterpreted if considered solely from the standpoint of the better nutritional condition of the mother.

General skeletal development, weight and length combined, denote the "size" of the fetus. Size, in this sense, presumably in the main is determined by the activity of endocrine glands. Their activity under normal conditions, obviously is controlled by general racial and by more specific hereditary influences.

The weight alone is chiefly dependent upon the amount of fat tissue and around this point hinges the entire problem of the Prochownik diet.

Conclusive evidence has been adduced that certain substances, present in the maternal organism in abundance or to a pathologic degree, as a rule, are carried to the fetus. This fact apparently permits the deduction that an abundance of certain food substances might lead to an abnormal fat deposit in the fetus. Overeating on the part of the pregnant mother might have an etiologic relation to excessive weight of the newborn child, but this relation is neither definitely established nor as obvious as it would seem in the occasional clinical report. The habit of overeating commonly is found associated with physical inactivity. Such inactivity undeniably tends to cause overcarrying. Overcarrying, in the belief of all investigators, represents the most conspicuous causative factor in excessive size of the newborn.

It can be conceded, that habitual overeating during pregnancy in some instances may be responsible for a dystocia which could have been avoided by stricter adherence to a dietary more in accord with a proper prenatal régimé. But in the light of present knowledge the problem of the possible harmful effect of persistent overeating can not be brought into any relation to the question whether it is possible to keep fetal development below the normal level by food restrictions.

Biologic facts and experiments clearly show that the transition to the fetus of substances essential for its normal development is automatically regulated by physiologic placental function, and cannot be interfered with unless the supply of such substance in the maternal organism is reduced below the level required for the safe maintenance of the mother's health.

Proper prenatal care comprises all those measures by which the most favorable conditions are secured for a normal development of the fetus in utero. This care necessarily includes dietary provisions. The pregnant woman should not be permitted to eat to excess, by responding without restrictions to the increased food desire created by the food demands of the fetus. It has been estimated that pregnancy increases the daily demand by approximately 400 calories to a daily average of 2600 calories. A food increase, therefore, is necessary. The food should be nutritious, easily digestible and as free as possible from substances that tend to irritate renal tissue. In the Prochownik diet proteins are substituted for carbohydrates and the water intake greatly reduced. This diet, therefore, is not adapted to the special needs of the pregnant woman. In the absence of most careful supervision this diet may actually become responsible for toxemic conditions which proper prenatal dietetic care so assiduously attempts to avoid.

METROPOLITAN BUILDING.

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THE SPECIALTY OF OBSTETRICS. PRESENT STATUS, POSSIBILITIES AND IMPORTANCE.*

BY

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WHAT I have in mind to say, in response to an invitation to appear upon this program, is the outgrowth of a discussion which took place at a joint meeting of this Section and the Section on Nervous and Mental Diseases in New York at the June meeting, 1917.

At that meeting a paper entitled "The Influence of Labor on the Brain Development of the Child" called attention to the very great responsibility resting upon practitioners of obstetrics for the prevalence of serious brain lesions due to faulty delivery, to prolonged labor, to the use and non-use of forceps with compression of the child's head, contusions and other grave injuries.

It charged the obstetricians with negligence in the use of forceps and with lack of proper appreciation of the seriousness of the situation both as regards the individual and the State.

In the discussion which followed there was quite general agreement as to the authors' premises, which, as a matter of fact, had many times previously been put forward by men in the same field. It has long been a recognized fact that many women are sacrificed every year to the incoming generation and that many babes are lost or mained in body or mind, so that apprehension of the event and the future is a common attitude among parents.

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*Read at a meeting of the American Medical Association, Section on Obstetrics, Gynecology and Abdominal Surgery, June, 1919.

Long ago I pointed out how large a percentage of life was sacrificed in labor; 7 per cent. mortality for infants it was then, and over 60 per cent. morbidity for mothers. Though there has been some progress in the interest of the child with a reduction in birth mortality to about 4 per cent., there seems to be still an untouched area of danger for the mother which it is the privilege, as it should be the responsibility, of the science and art of obstetrics to clear away.

At the meeting to which I allude, speaker after speaker corroborated the statements of the essayist as to the injuries inflicted upon the race by the neglect of scientific handling of this momentous period of woman's physiologic life, but I was impressed by the fact that few seemed to appreciate the injustice of making this unfortunate situation an arraignment of practitioners of obstetrics, and it is in defense of that small but worthy group that I am moved to offer these remarks, as well as to point out the way to a remedy well within our reach.

I say the group of men at whose door the faults of obstetrics are thus unwarrantably laid is small, and I am myself astonished at the figures which show comparison between those who have undertaken the practice of this branch with sufficient exclusiveness to class themselves as obstetricians solely, and practitioners of all other branches.

I have only approximate data to give you, as taken from the rostra of various special societies, though I do not know where one could look for better data. The proportion reads something like this (taking four representative cities of the East, namely, New York, Philadelpia, Boston and Chicago): In one society which registers 356 specialists in surgery, there are twelve who call themselves obstetricians exclusively, and in the same cities the American Medical Association, with 516 registered as surgeons, has twenty-four obstetricians.

When we compare this percentage with the entire membership of the A.M.A., the figures become nothing short of appalling, and the twenty-four obstetricians practically disappear from the reckoning when any attempt is made to fix responsibility for the faulty obstetrics of the day. Obviously it is not they who are doing the work for our suffering communities, and I appeal again as on other occasions for a reconsideration of this whole subject, placing of the blame where it belongs and where the remedy should be applied.

Why then this neglect of a specialty, manifestly one of the most useful, broad and inclusive of the greater branches of medicine, as it is by all odds one of the most attractive and satisfying in its rewards? To answer this question we must look at the status of the art in public appreciation; for, after all, it is the attitude of the laity that determines largely the bent of the practitioner.

We shall insist, however, that the profession is not without influence in the matter of this public attitude, but, accepting the facts as they are, admit that there is no specialty about which there is so widespread a misconception as this.

Everybody is doing, has always done, obstetrics, and this continunity of common participation is one of the hardest things to break. In a short lifetime, with other, better defined, more recently organized specialties opening before him, the doctor hesitates to stake his future on a career in which associations are so indiscriminate and about which clings so much old custom and superstition of ignorance. One dislikes to be disputing the ground with midwives or poaching upon the broad preserves of the general practitioner.

The situation is rather different with the other specialities. Most of them may be said to have grown out of the advancement of the science of medicine, as research and study brought knowledge of disease manifestations; as new names for old lesions seemed to give distinction to the branches making the discoveries; to make them in a way creators of new science. But with obstetrics one is not concerned with finding a new disease.

It is not the elimination of a pathologic process which should be the preoccupation of a practitioner of this speciality, but the safeguarding and superintending of what should be the most normal of all life functions. Yet around this function gathers the history of all the worst forms of accumulated ignorance and malpractice, and still vitally connected with its practice is a discouraging mass of all the errors and misconceptions still extant.

The general public has its inherited ideas of childbirth, and while pursuing an existence inimical to the normal fulfilment of the function, goes on stubbornly ignoring the mischief that has been wrought and neglecting the care and preparation which widespread pathology demands.

If the profession does not take the lead in changing the situation, the day is coming when this will be recognized by all constituted commissions of public health and by all authorities occupied with the socialization of reforms, as the most pressing concern of the people which wishes to save itself from extinction. But it has not been left to government authorities to suggest the great health movements which have brought us through former perils to where we are; it is the medical profession which has originated all such suggestions and the reward is with us in the acknowledgments of communities and states.

This is the time and opportunity for the inauguration of a new movement for better obstetrics. Not only must we insist upon it that general practitioners be better equipped for the numerous emergencies which are met, too often without being recognized, but we must launch a campaign for such an understanding and appreciation of the importance of obstetrics as a specialty *per se*, as shall make it not equal in attraction to any other, but to all the others together, since the scope of its application is universal.

When we speak for an insistence upon better practice on the part of those now doing the work we are demanding what it will be difficult for men in the press of modern activities to render. The blame is not alone on the lack of training and comprehension of this great specialty, it is on the attitude of mind that permits one to grasp at the performance of grouped specialties, any of which is worthy one's entire time and attention.

When we consider the character of the pathology to which the pregnant and parturient women is subjected, it is evident that unless the practitioners of obstetrics gives himself up to it with enthusiasm he is but skirting the edge of its possibilities.

There is to-day scarcely a branch of medical science that does not have a bearing on parturition, and we are making more and more discoveries that compel us to abandon the old, easy methods of generalization and devote ourselves to the study, not of diseases in the mass but of individual cases, so large a part do the new, vague menaces of anaphylactic manifestations, metabolic variations and varied tolerances play in all therapeutics and in prophylaxis.

In handling our cases, we must remember that it is the losing or the saving of the individual that counts, and in this specialty two individuals are in danger. And our concern is not only with the present but the future, for with every measure taken to ensure safe and healthy delivery of the child we are steadying the heartbeat of the age that follows us.

Gentlemen, it is for us to do our part in that movement which we are fond of calling "making the world safe for democracy."

We have a vastly better opportunity than those who have the reforming of some broken product of faulty birth. It rests with us to begin such a campaign of education as shall render the public afraid to undertake so serious a step as the bringing new life into the world without the advice and supervision, during the entire period of gestation, of the ablest obstetrician obtainable.

It is for obstetricians to remove from the way of the embryo those dangers which make its progress to birth the questionable thing statistics prove it to be. It is still more the duty and privilege of this specialty to oversee the condition of the mother from the first advent of maternal hopes until safe delivery of a healthy child, with satisfactory conclusion of the puerperium.

That this is not done by those at present intrusted with midwifery practice, the vast army of crippled, inefficient women, doomed to defeat in life's struggle is sufficient witness. It does not need the actual figures of gynecic disease incident to childbirth to point out the great need of reform, though the records of any gynecologist are a sufficient proof of the lack of obstetrical training.

These familiar after effects do not, however, represent the relation of faulty obstetrics to the general morbidity among women; they are for the most part local manifestations, and leave a wide margin of speculation as to the part placed in the etiology of many systemic diseases by pathology in childbirth.

This illuminating fact can only be established by a system of careful and organized keeping of comparative records. This brings us to a consideration of the main remedy for the evils we have only begun to estimate. First, of course, there must be insistence upon greater skill and judgment on the part of the accoucheur, who might, by the way, well drop this title in favor of one that shall express more truly the function of a practitioner who presides over the entire period of gestation and the puerperium as well as labor itself.

Such cognomens were invented when presiding at birth and the ten days following were the measure of obstetrical responsibility.

With this will come a propaganda for the education of a careless public in matters of such universal importance. There might well be a close coöperation between the work of obstetrical societies and that of the various organizations for child welfare and for public health. Statistics should be gathered from schools for backward and defective children, from asylums for the blind, from hospitals for the insane and the feeble-minded and the crippled.

But chiefly there should be kept at all hospitals complete records of all cases of childbirth, and obstetrical cases should no longer be permitted in any hospital not specially equipped with all that pertains to the most efficient practice of the obstetrical art. In this direction the recent movement for hospital standardization is destined to play an active part.

When the records of all cases are not only kept on file in every institution receiving patients for treatment, but are accessible at all times to the public for study and comparison, the day for which medicine has waited so long will have come.

Then the public will not risk life and health in the hands of those whose claim to popularity rests on the power of personal advertising, but will meet the profession in demanding that advisors and custodians of the public health shall have authoritative, documentary evidence of their ability to assume the grave responsibilities which attend upon human pathology.

And this evidence shall be furnished by those standardized medial colleges which are following and leading, the movement for practical higher education; and by standarized hospitals whose case records are methodically and systematically kept to the last detail of therapeutic significance.

Hospital standardization will do more for obstetrics than any unorganized efforts could accomplish.

It will do away with false standards of merit; it will once for all clear the atmosphere of that lingering aroma of superstition which surrounds one who is supposed to be a "born doctor," and will establish the fact that it is trained skill which saves the patient. Hospital standardization will make it obligatory upon a staff and institution to show that they can and will furnish the highest degree of efficiency in caring for the pregnant and puerperal women and her offspring.

To recapitulate: The charge that poor obstetrics is to blame for a large per cent. of the evils and handicaps of childhood does not lie against the group of professed specialists in this science, but rather against the indiscriminate group of practitioners of all kinds, licensed and otherwise, who engage in the art as a side issue to other specialties. The uninformed public should be educated into a proper attitude toward this most important issue. All that the profession can do to raise the specialty in importance and estimation and to make it a factor in the betterment of the race and in the reduction of mother and child pathology should be done. Effective aids in this campaign are the movements in behalf of new methods in medical education and the standardization of hospitals; with particular emphasis upon the keeping of all records of obstetrical wards and hospitals and of private practice, to the end that by comparison and study and research into allied branches, much of the reproach may be lifted from a science which still acknowledges so high a mortality in its proper field, and which has not yet taken any accurate method of estimating the vast morbidity among women and children directly traceable to error, mishandling and misconception of the natural function of childbirth.

1200 AMERICAN BUILDING.

ON THE USE OF VERY SMALL DOSAGES OF PITUITRIN IN INDUCING LABOR AT TERM IN COMBINATION WITH NITROUS OXIDE ANESTHESIA TO ALLEVIATE THE LABOR PAINS.

BY
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THE administration of pituitrin in very small doses, as described in detail in Dover's and my article dealing with this method, in the *Medical Record* of August 11th, 1917, p. 238, employed in combination with nitrous oxide anesthesia, as recently adopted by me in private practice, with excellent results, represents an ideal method of conducting labor at term. The response to pituitrin in suitable cases (see above mentioned article) was found to be very general, and all the mothers without exception did well under its use. The infants were invariably born in excellent condition. Extensive experience has convinced the author that this drug can be advantageously employed for the induction of childbirth at term as well as for its safe and speedy acceleration. The best mode of administration is by the intramuscular injection of an average dose of two or three minims. Pituitrin is employed in the form of repeated intramuscular injections, true labor usually beginning after the second small dose, sometimes after the first or not until after the third dose. The plan, successfully adopted by the author in hospital practice and among his private clientele, is as follows (as already outlined in his previous article). At 7 A. M. the woman receives 1 ounce of castor oil, and two hours later at 9 A. M. an intramuscular injection of two minims of pituitrin, followed at 11 A. M. by a repetition of this dose. If labor pains are elicited, the pituitrin is resumed at intervals of half an hour, if no pains result, the treatment is stopped and another attempt is made on the third following day, again administering the same small dosage.

Combination With Nitrous Oxide Anesthesia.—As soon as labor pains are actually started, a trained anesthetist holds himself in readiness to administer nitrous oxide, not uninterruptedly but at the very beginning of each uterine contraction, grading the amount of gas used according to the severity of the pain, and progressively increasing the anesthetic with the advance of labor. During the expulsive stage, which is materially shortened by the action of pituitrin, averaging slightly over one hour, enough nitrous oxide gas (pure NO, with a variable admixture of oxygen) may be given to produce a brief surgical anesthesia. Patients are unanimous in their indorsement of this latest adjuvant of childbirth. In view of its reliability and safety, the combination of pituitrin in physiological dosage with nitrous oxide anesthesia undoubtedly represents a most important step in advance in the domain of obstetrics.

48 East Seventy-fourth Street.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

(Continued from September.)

Dr. Franklin H. Martin, of Chicago, Illinois, then delivered the Presidential Address, entitled

GYNECOLOGY AS A SPECIALTY.

(For original article see page 249, September issue.)

Dr. Frederick C. Holden, of Brooklyn, New York, read a paper entitled

ARE THE OPERATIVE PROCEDURES DONE FOR DYSMENORRHEA AND STERILITY JUSTIFIABLE IN THE LIGHT OF DEVELOPMENTAL STUDY?

(For original article see page 415.)

DISCUSSION.

Dr. George Gray Ward, Jr., of New York City, stated that where there was occasion to utilize operative procedures, he thought a good deal of care and thought should be spent on the type of procedure which it was desirable to employ, the details of which were important. He had had the same experience with the different operations that Dr. Holden had had, notably the Dudley operation which he never favored for this purpose because, it seemed to him, we could usually accomplish as much by the uterine stem method without leaving a mutilated posterior cervical lip and with often accompanying ulcerated surfaces there. In using the stem one should be very particular to be sure of what he was trying to accomplish. Dysmenorrhea used as a broad term was apt to mislead one. There were different types of dysmenorrhea. We might have uterine dysmenorrhea or ovarian dysmenorrhea. If it was purely of the uterine type, as evidenced by crampy contractions of the uterus, which usually indicated partial stenosis in the canal, or a narrow os, which did not permit of a free flow of menstrual blood and a tendency to immaturity in the development of the musculature of the uterus without any adnexal disease, or without particular ovarian pain at the time of menstruation, then the stem had a place. At the present time, he was using a glass stem which was a more cleanly instrument. It had a slight anteroposterior curve which facilitated its introduction. A straight stem, like the Baldy stem, was difficult to introduce in cases of anteflexion.

Dr. Arthur H. Curtis, of Chicago, asked Dr. Holden whether he thought the persistence of corpus luteum bore any relationship to sterility.

Dr. Henry P. Newman, of San Diego, California, called attention to a simple procedure which he presented to the Society years ago under the name of tracheloplasty. He pointed out at that time what he endeavored to put before the profession was a plastic operation on the cervix, with sufficient latitude not to require the patient to be fitted to the operation. The operation was capable of being adapted to nearly all the mechanical cases of dysmenorrhea, and he had used it during these many years with very gratifying results.

Dr. Holden, in closing the discussion, expressed the opinion that continuous absence of corpus luteum was one of the causes of sterility. He said it was not essential in treating a case of primary sterility to go into the male part of the proposition before instituting the therapy he had described. He thought it was the duty of the gynecologist to thoroughly investigate the male partner before instituting any surgical procedure on the woman. That was the difference between instituting this therapy and doing an operation.

Dr. George W. Kosmak, of New York City, read a paper on

THE TREATMENT OF CERTAIN CASES OF PLACENTA PREVIA BY CONSERVATIVE MEASURES.

Dr. Kosmak said that since the perfection in methods of performing the abdominal Cesarean section, this had been widely advocated as one of the most satisfactory methods of relief in this condition and in a limited class of cases it was undoubtedly of value. The older procedure involving the Braxton-Hicks version with perforation of the placenta and the use of the fetal thigh as a tampon hardly seems a fair procedure in view of the certainties attending the classical Cesarean section and was becoming generally discarded except as a measure of emergency. The primary danger to the mother from hemorrhage and shock and the secondary risks from sepsis and embolism had been the deciding factors in adopting any method of treatment and all deliveries by the vaginal route were overshadowed by these possibilities. In cases presenting a rigid and only slightly dilated cervix in a primipara and the probability of a central placenta previa with the child at or near term and still in good condition, because the amount of bleeding had not been extreme, there was no question but what the abdominal Cesarean section offered the best method of delivery for both mother and fetus. But it would be found that the large majority of cases were outside of this group; that we were not dealing with central implantation of the placenta but those in which only a portion of this organ impinged upon the region of the internal os or the lower uterine segment, so that hemorrhage of any extent resulted only after the cervix had become thoroughly softened and was dilating. Nevertheless, even in this group the amount of bleeding might be sudden and excessive, especially as the lower uterine segment in multiparæ, in whom we most often found this abnormality, was thoroughly softened and separated easily from the placenta.

As the first consideration in any given case was to stop the hemorrhage, the vaginal pack might seem to offer a ready solution, especially as its application was usually an emergency one. Unfortunately we found that in many cases admitted to our hospitals in whom this procedure had been resorted to, the blood saturated the substance of the gauze or absorbent cotton ordinarily employed and allowed for the collection of large clots above the packing without control of the hemorrhage. The pack, moreover, acted as a stimulus to uterine contractions and as the membranes were often unruptured the presenting part was not satisfactorily forced down against the bleeding area in order that it might act as a check on the same.

The use of the elastic bag in place of the gauze pack had been widely advocated and unquestionably good results had followed its employment. The usual procedure directed the insertion of the bag through the ruptured bag of membranes or through the mass of the placenta, with or without traction on the same to insure compression. In criticizing the mechanics of this procedure attention must be called to the fact that such compression of the bleeding area in the lower uterine segment was necessarily indirect, because the soft placental mass remained interposed between the bag and the uterine wall and more or less continuous bleeding, although if only slight, was usually present. In the attempt to introduce the bag it had been his experience, at least, that considerable bleeding might result from this effort because of the undue placental separation brought about by the same. He also found that unless strong labor pains were induced, the bag was not firmly held against the placenta unless traction was applied and if the latter was not carefully guarded a sudden laceration or rupture of the lower uterine segment might take place.

In view of the shortcomings and the desire for a possibly more satisfactory method of treatment along these lines, what modification of such method could be advocated as a substitute? It must be borne in mind that it was essential to bring about gradual dilatation of the cervix without laceration, to reduce the possibility of hemorrhage as much as possible, to avoid septic infection and, of course, to deliver a living child.

Control of the hemorrhage during the process of dilatation remained the important indication and this he believed could be more effectively made by the extraovular introduction of the bag than by any other means. His attention was first called to this method by its description in the text-book brought out by Dr. E. B. Cragin shortly before his death. In reading this description he was struck by the good results which Dr. Cragin claimed for the method, and while at first skeptical of its value he soon afterward began to employ the same. Although not an infallible procedure, he believed that a thorough trial would convince every one of its practicability and value in the majority of cases. It was for this reason that he had ventured a preliminary report on the procedure in the expectation of publishing a more complete study at a later date. He had become impressed with the fact that as an emergency measure it was much superior to the intraovular introduction of the bag because less harm was done by hospital interns, for example, than if the perforation of the placenta with a Braxton-Hicks version or intraovular introduction of the bag was carried out. As soon as a diagnosis was made, no further manipulations were necessary in attempting to enter the amniotic cavity and the bag might be introduced through the os alone very much more quickly.

A résumé of the cases of placenta previa taken from the records of the New York Lying-In Hospital from June, 1904 to December 31, 1918, showed a total of 534 cases. Among them there were recorded 75 deaths of mothers (14 per cent.) and 105 deaths of children after delivery. A total of 223 stillbirths was recorded, making a total fetal mortality of 328 or 62 per cent. These cases were treated by a variety of methods other than the extraovular bag insertion. While this was rather an alarming proportion of both maternity and fetal deaths, the fact must be borne in mind that a great many of these cases were sent in by outside physicians after various methods of treatment had been employed and usually considerable hemorrhage had resulted.

The personal cases previously described were but three examples of about ten consecutive cases of placenta previa which he had treated with the extraovular bag method. Although insufficient in number to permit of general conclusions, they had impressed him with the value of the procedure and in calling attention to a method which had not been very extensively used and was purely obstetrical in character, it was with the hope that it might be given a more extensive trial by others. It seemed particularly adapted to multiparæ with moderately softened cervices, was readily applied, did not of itself cause additional bleeding, reduced the necessity for extensive manipulations, was free from shock and safer and more efficient for emergency use.

Dr. John A. McGlinn, of Philadelphia, read a paper on

VENEREAL INFECTIONS IN THE UNITED STATES NAVY.

Dr. Palmer Findley, of Omaha, Nebraska, read a paper on

CONTROL OF VENEREAL DISEASES IN THE DETENTION HOME FOR WOMEN.

(For original article see page 421.)

DISCUSSION ON THE PAPERS OF DRS. MCGLINN AND FINDLEY.

Dr. Howard A. Kelly, of Baltimore, stated that next to the drink question this was the most important topic we had to deal with in our civic communities to-day. He was very much interested to find that his own judgment and that of many others was fully confirmed by Drs. McGlinn and Findley.

The Navy and Army had shown splendidly what zeal and well directed purpose could accomplish if people were only aroused. The Army and Navy had been aroused to secure efficiency, and the zeal that had been aroused had carried everything before it in dealing with the venereal disease question. The great trouble in dealing with this question was that our laws were not enforced. Morals was a universal specialty, and if there was a moral element concerned in the drink question and in venereal diseases, everybody of standing was obligated to handle these questions from a moral as well as other standpoints.

Dr. Arthur H. Curtis, of Chicago, called attention to three sources of infection, one of which was the urethra; second, Skene's ducts, and third, the cervix. Of these the most important of all was the cervix. Infection got into the open os; the glands were irritated; there was an irritating infection with increased discharge from laceration of tissue, the glands became enlarged, and there was secreting glandular tissue throughout the cervix which was permeated to a great depth with infection.

Treatment should be directed toward curing the urethra and, in addition, carrying out the measures which Dr. Findley recommended, and which the speaker would warmly advocate, using sounds to do away with any stricture or damming back small foci of infection which could not be gotten at. In his experience it was difficult to cure these cases by applying nitrate of silver solution to Skene's ducts. He had recently been using a local anesthetic, splitting up the ducts, and in that way curing that focus of the infection. The cervix was best treated where there was persistent gonorrheal infection, by the use of strong silver nitrate solution which was tamponed off so that it could not get down into the vagina. Where there were erosions of the cervix they could be destroyed by fulguration and by the application of powder around the cervix which prevented the discharge from coming down, in this way curing the erosion. There were instances in which one could not effect a cure except through radium and doing hysterectomy. Radium put in the cervix and left there would destroy the hypertrophied glands and one would have a cure of the infection.

DR. EDWARD A. SCHUMANN, of Philadelphia, stated that it was his practice to have women afflicted with gonorrhea report daily during the menstrual period. It was therefore a simple matter to treat the vagina with cotton swabs and cleanse any débris, mucus and blood from the vagina and enter the cervix boldly with iodin. It was his practice to swab thoroughly with 5 or 10 per cent. silver nitrate. His results had been very gratifying. The period of gonorrheal infection was shortened, although he could not report definitely as the work was not yet complete.

DR. JENNINGS C. LITZENBERG, of Minneapolis, said that inasmuch as the venereal diseases were the greatest enemies we had to combat, every available force must be applied. *First*, education; *second*, treatment of the disease, even prophylaxis, and, *third*, the use of all civic organizations, such as women's clubs, Chamber of Commerce associations, going into the business community to educate the people, and the churches. There was nothing like education for the furtherance of moral propaganda, and people would rise when they were properly educated.

DR. MCGLINN, in closing the discussion on his part, stated that the results which they had observed in the Navy could be duplicated in civil life if the same methods of education were used. It was the duty of the medical profession to set forth in unmistakable terms the ravages of gonorrhea, and only by so doing could we hope to accomplish the results desired.

DR. FINDLEY, in closing, said that he had the utmost confidence in cleaning up these cases on schedule time, if they did not indulge in excessive venery. He gave them daily applications for a period of eight or ten days, provided they did not have any extrauterine inflammatory lesions, such as pus tubes, etc.

DR. JAMES E. KING, of Buffalo, New York, read a paper on

PSEUDOMYXOMA PERITONEII.

(For original article see page 426.)

DISCUSSION.

DR. HENRY SCHMITZ, of Chicago, said that one case came to him that was observed four years ago, and he succeeded in keeping this patient free after recurrence without operative procedure. When the abdomen was opened and the condition seemed hopeless, he subjected the patient to massive doses of the *x*-ray, and she finally died of intestinal obstruction.

In a second patient in whom he incised the cysts, he introduced radium tubes into the cavity and followed it with the *x*-ray. This patient had a perforation of the uterus and the case seemed to be absolutely hopeless. He thought he would mention this treatment as it might offer a means of finally preventing or ameliorating these pseudomucinous ovarian cysts in these conditions.

Dr. De Witt B. Casler, of Baltimore, said the cases he had seen had followed pretty closely the course that Dr. King had spoken of. They pursued a malignant course and lasted only two or three years at the most.

Dr. King, in closing the discussion, said he had had an opportunity to study two of his cases very carefully, and in one tried the *x*-ray, but without results.

In a paper entitled

THE RELATION OF PREVENTIVE MEDICINE TO GYNECOLOGY.

Dr. Henry P. Newman, of San Diego, California, stated that the history of the progress of medical science was a record of battles against an enemy as persistent as life itself. The struggle had not been to make material life everlasting by eliminating death but, by striking ceaselessly against those errors of life which were the basis of disease, made living always more worth while. The common notion that the science of medicine, like the vulture, gloated and battened on the miseries of the body, was a sorry delusion. There should be better popular understanding of the activities of that science which had from the beginning held out strong and skilful hands to weakened humanity, guiding and supporting its blind and often foolish steps, seeking, for highest reward, only the hope that some day its charge would be able to walk alone.

This, then, was the province of preventive medicine—to teach mankind to do without medical aid, except for such conditions as did not fall within the realm of preventable diseases. Unfortunately we were still far from this achievement when we took up the problem of gynecic disease. A per cent. that could scarcely be reckoned was here due to entirely preventable causes and the aim of this specialty, in this post-war period when our great national and racial preoccupation was reconstruction, should be the identification and elimination of the cause of disease in women.

We might go at it with great thoroughness, dragging it back into the remote recesses of psychology and biology, or we might face it quite simply from the human standpoint, asking two questions: Why were women suffering these unnecessary afflictions? and, what should we do to prevent them?

The case records of the gynecologists answered the first question, but here the answer came too late. While developmental defects, faulty obstetrics, infections, were all causative factors, the time for the correction of these evils was past time.

The answer to the second question: The remedy was the concern of the entire medical profession to-day, and when it was faced with thoroughness of purpose there would be established that relation of preventive medicine to gynecology which was not only the concern of this specialty but of the entire people. Already the new current of democracy was turning in this direction and against the tide of unconditioned medical freedom, so strongly urged by the advocates of various profitable cults and isms.

The gynecologist, working in the new medium of standardization, could come before his colleagues of the related specialties and lay emphasis on those points in which he felt their coöperation was vital in his work. His own researches, fortified by the statistics of hospitals, permitted him to show to what degree the lesions he handled were due to causes outside his domain in practice while well within his province of theory. For the most part he knew that he had to deal with the results of errors and neglect in the development and in the parturient periods and with infection. He must, therefore, ask of internists, family physicians and of pediatricians, intensive efforts toward the control and safeguarding of the growing girl. Each time that an infantile uterus, with its train of subsequent evils, presented in an overworked school teacher, artisan, or student or barren wife, he must take to those other specialties a plea for the more thorough supervision of girlhood, and a campaign of effort toward elimination of the evils in our social and educational system which intensively cultivated the mind while destroying the body.

And when he said "destroying the body" it was unfortunately not in a spirit of sensationalism; it was a reference in cold blood to the already widely circulated reports of some of our leading authorities in obstetrical science who agreed that the new type of woman, appearing as the effect of overcivilization, was no longer fit for maternity. "Indoor life and nerve tension" having prevented normal functional development, they announced that it was now better that "the delicate nervous woman be delivered by Cesarean section than be subjected to the ordeal of labor."

It was now that we, as an organized specialty, must turn from the laboratory and clinic for the moment in our investigations of disease and join forces with all other medical organizations and plan movements for the study and promotion of preventive measures. Instead of making our supreme effort the giving to the delicate, nervous, incapable mother, a child by the easiest surgical method, let us take up the work of giving the children yet to be born their first right, the staunch and stalwart mother to whom her normal labor shall be an expected and a remembered blessing.

As gynecologists we could offer the most comprehensive program dealing with the health of women, and immediate and full coöperation with other specialties on our part would result in as widespread and momentous effects as those we had already alluded to as following the campaign against venereal diseases in our Army. And the need was bringing this emphasis, not as an indictment of the past but as a legitimate outgrowth of all past efforts.

Just at the beginning of the war period a glance over special society programs showed the dawning recognition of this vital demand for coöperation in preventive medicine. One paper in particular, read to a gathering of gynecologists, had as its text the absorption of these specialists in the details and practical aspects of their work to the exclusion of the theoretical part which concerned itself with research into etiology. He maintained that there was much to be said for the defense in this case. American medicine was a self-made thing. It had lacked endowed institutions; it had been obliged to deny emoluments to the devotee of pure research; it had been built up by the average man of big ambition to excel and a very real purpose to perform thoroughly his responsible duty of making the sick well. It had been practically essential that he apply himself to the thing to be done and the way to do it.

It must not be forgotten that underlying the enthusiasm with which the American practitioner had developed the specialties had been this very urge toward wider knowledge. He had felt that associations of colleagues devoted to the development of one line of work offered the best substitute for the endowed institution, and it had been all he could afford. It would be difficult to prove that this method had not had distinct advantages in favor of public health, which was after all the *sine qua non* of the art of healing. For we had now, as a result of all this intensive, special application, the demand for practical knowledge of laboratory theories of disease prevention, a return, as it were, of the demand for the "general medical man" who was a sort of résumé of all the specialties.

The answer to this demand was not to be along the lines that were suggested before the war period, *i.e.*, wider knowledge of all the branches by each specialist. The volume of necessary knowledge had looked too large for any such solution to be practical. The answer must be found in this union of all the specialties into a coöperation for the development of preventive medicine. Each specialty must determine for itself the form and extent of its own relation to preventive medicine.

As he had said, it was beyond the scope of this paper to point out the degree in which gynecology was interrelated to obstetrics, to pediatrics, to the department of the alienist and the internist; its whole intent was to leave a deeper sense of the high position to which this specialty might attain when it had realized its full opportunities for coöperative effort, and a heartier zeal to keep in touch, both in private practice and in public work, with the great impetus toward preventive medicine.

Dr. Edward A. Schumann, of Philadelphia, read a paper entitled

RUPTURE OF THE DEEP EPIGASTRIC ARTERY AS A CLINICAL ENTITY, WITH THE ANALYSIS OF A CASE.

(For original article see page 432.)

OFFICERS FOR THE YEAR 1919–1920.

President—Robert L. Dickinson, of Brooklyn.
First Vice-president—J. Clarence Webster, of Chicago.
Second Vice-president—Jennings C. Litzenberg, of Minneapolis.
Secretary—George Gray Ward, Jr., of New York.
Treasurer—Brooke M. Anspach, of Philadelphia.

RECORD OF CURRENT LITERATURE IN OBSTETRICS, GYNECOLOGY AND ALLIED SUBJECTS.

A. OBSTETRICS.

Titles marked * are abstracted in the current issue.

* Hydramnios with Rapid Progress Augmenting after Death of Fetus. Balard, *Rev. mens. de Gynec. et d'Obstet.*, vol. xiv, 1919.

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Limitations of Cesarean Section. E. G. Zinke, *Ohio State Medical Journal*, vol. xv, No. 3, March 1, 1919.

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Case of Pubiotomy. D. A. Planell, *Revista Española de Obstet. y Ginecologia*, vol. iv, January, 1919.

Contracted Pelvis. Garcia-Casel, *Revista Española de Obstet. y Ginecologia*, vol. iv, March, 1919.

* Amniotic Hydrorrhea. Weymeersch, *Revue mens. de Gyn. et d'Obst.*, 1919, xiv, 214.

* Ultimate Fate of Pregnant Women with Cardiac, Pulmonary and Renal Disease. Hüssy, *Corres.-Bl. f. Schweiz. Aerzte*, 1919, **xxxi**, 1145.

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Placenta Previa. L. Huguet, *Revista de Medicina y Cirugia*, vol. xxiv, May 25, 1919.

Albuminuria of Pregnancy. E. P. Davis, *Canadian Medical Association Journal*, vol. ix, No. 7, July, 1919.

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* Cerebral Hemorrhage of the New-born. M. Warwick, *American Journal Medical Science*, vol. clviii, p. 95, 1919.

* Accidental Hemorrhage. W. Smyly, *Dublin Journal Medical Science*, June, 1919.

* Newer Methods of Cesarean Section. J. B. DeLee, *Jour. A. M. A.*, vol. lxxiii, p. 91, 1919.

* Intraperitoneal Rupture of Bladder During the Puerperium. W. Kohlmann, *U. O. Medical and Surgical Journal*, vol. lxxii, p. 47, 1919.

* Episeotomy. C. G. Child, *Medical Record*, vol. xcvi, p. 142, 1919.

* Pregnancy and Labor Following Amputation of Cervix Uteri. O. S. Pavlik, *Surgery, Gynecology and Obstetrics*, vol. xxix, p. 172, 1919.

* Radical Cure of Pelvic Deformity. H. Jellett, *Surgery, Gynecology and Obstetrics*, vol. xxix, p. 117, 1919.

* The High Cesarean Section. Bar, *Archives Mens. d'Obstet. et de Gynecologie*, vol. viii, p. 49, 1919.

B. GYNECOLOGY.

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*Experimental Study of Abdominal Adhesions. M. Behrend, and N. S. Rothschild, *Pennsylvania Medical Journal*, vol. xxii, 1919, p. 537.

* Alternating Periodic Ovarian Swellings. E. Ries, *Jour. A. M. A.*, vol. lxxii, p. 100, 1919.

* Treatment of Uterine Myoma. A. Stein, *Jour. A. M. A.*, vol. lxxiii, 1919.

* Occurrence of New Growths in the Abdominal Wall after Laparotomy. W. C. Danforth, *Surgery, Gynecology and Obstetrics*, vol. xxix, p. 175, 1919.

* Technique for Bloodless Hysterectomy. B. Van Hoosen, *Surgery, Gynecology and Obstetrics*, vol. xxix, p. 196, 1919.

* Nonpuerperal Abscess of the Ovary. Chomé, *Arch. mens. d'Obst. et de Gyn.*, viii, 113, 1919.

* Hernia of the Ovary Into the Vagina Through a Colpotomy Wound. Rouffart, *Revue mens. de Gynéc. et d'Obstetrique*, vol. xiv, p. 213, 1919.

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Preliminary Report on the Reconstruction of the Circulation of the Liver, Placenta and Lung in Health and Disease. Louis Gross, *The Canadian Medical Association Journal*, vol. ix, No. 7, July, 1919.

C. MISCELLANEOUS.

* Intestinal Obstruction. L. G. Dragstedt, C. A. Dragstedt, J. T. McClintock and C. S. Chase, *Journal Experimental Medicine*, vol. xxx, 1919.

SELECTED ABSTRACTS.

A. OBSTETRICS.

Hydramnios with Rapid Progress Augmenting After Death of Fetus.—Balard (*Revue mensuelle de gynecologie, etc.*, 1919, xiv, 187) relates a case of this species which summed up is as follows: a woman of twenty-five who had suffered previously from puerperal endometritis and probable metritis became pregnant again with death of fetus in utero suggesting syphilis very strongly—ascitic fetus and overlarge placenta. The Wassermann test of the mother was found to be positive. Coincident with the death of the fetus the hydramnios which had been already present underwent an augmentation accompanied with an outbreak of fever. The amniotic fluid continued to accumulate after fetal death. The author is unable to find a parallel case in literature or to suggest an explanation of the phenomenon. The enlargement of the hydramnios increased the circumference of the abdomen 3 cm. in eighteen hours. The woman made a complete recovery and was discharged with the seroreaction still positive.

Recovery in a Case of Purulent General Peritonitis Due to a Provoked Abortion.—Aubert (*Revue mensuelle de gynecologie, etc.*, 1919, xiv, 182) relates a case which illustrates the need of optimism even when the chances are but one in ten for recovery. The woman infected herself with a sound repeatedly introduced into the uterus. At an early period the curet was used to clean out the cavum and antiseptic injections given. The symptoms of general peritonitis were not slow in making their appearance, the picture becoming typical. A subumbilical median incision was quickly made and much fetid seropus evacuated. The contents of the abdomen were let alone as much as possible. The patient, who was vigorous, held her own under supporting treatment. A colpotomy was added for drainage in addition to drainage through the abdominal wound. The worst feature was the meteorism to remedy which the author performed an enterostomy. This step turned the scale in the patient's favor and she began slowly to improve up to complete recovery with closure of the artificial anus.

Warfare Against Abortion Nonindicated.—Meyer-Ruegg in the *Correspondenz-Blatt für Schweizer Aerzte* for July 3 refers to the wide differences of opinion among physicians on this subject. One man, Muret, has summed up the subject as follows: general indications refer to saving the mother's life, the mother's health, and, when the mother is doomed, the life of the child. Therapeutic abortion is truly indicated under these conditions. The so-called eugenic indication is not as yet so nearly perfected as to make it legitimate and the same is true of pregnancy as a result of rape, etc. The preceding are all termed general indications and contraindications. Then there are of course the customary obstetrical and gynecological indications which involve cesarean section and hysterectomy and need not be detailed here. The so-called medical indications are numerous and comprise incoercible vomiting, nephritis, tuberculosis, heart disease, mental and nervous affections, pernicious anemia, etc. In these affections it is often possible to compromise by waiting until the period of viability and then provoking premature delivery which gives the child a chance. The medical man has to use his discretion in these cases and will seldom go ahead with his unaided volition. In any of the above mentioned conditions it may be advisable to interfere and the author lays down numerous rules for the practitioner's guidance which can hardly be reproduced here. Thus he lays down six conditions in which tuberculosis justifies terminating the pregnancy and seven in which the same step is justifiable in mental and nervous diseases. There is some vagueness here and there, as in conditions like dementia precox and severe hysteria, in which the author would end the pregnancy "in certain forms" of the affections. Since the fact that women variously afflicted may give birth to healthy children will always influence certain scrupulous practitioners to shrink from feticide, rules for the guidance of the practitioner must be laid down by a consensus of opinion on the part of leading medical societies and this step is destined to be taken by the Swiss Gynecological Society.

The Ultimate Fate of Pregnant Women with Cardiac, Pulmonary and Renal Disease.—Hüssy (*Correspondenz-Blatt für Schweizer Aerzte*, 1919, xxxi, p. 1145) has written a valuable statistical article on this subject. The conclusions are as follows: severe cases of valvular lesions are to be regarded seriously. They do not figure in the primary causes of maternal death, but a rather large number of women die in the next few years after delivery even when they seem to have withstood the experience well. Fromme's optimisitic viewpoint about these cases can no longer be maintained. The quality of the myocardium and the form of valvular lesions must be taken into account in prognosis. Mitral stenosis is extremely dangerous and only a few women with this affection survive labor permanently. Not only the act of labor but gestation itself is sufficient in some cases to cause death. In pulmonary tuberculosis on the other hand a more optimistic viewpoint is possible. The latent form is hardly influenced by gestation and even in the manifest forms one sees not rarely improvement in the general condition. Nevertheless one must bear in mind that years after a labor deaths occur which are attributable to that labor. In such cases it is very likely not the gestation but the mere act of labor which is responsible for the fatal issue by the mobilization of bacilli.

Nephritis, like heart disease, is a serious complication of gestation. In contradistinction to tuberculosis it seems to be the gestation itself which exerts the injurious influence by setting up a secondary nephropathy upon the primary nephritis. The primary mortality is very high. One-fifth, perhaps one-fourth, of the women are sacrificed while 20 per cent. more are made worse. But if pregnancy is withstood the patients may improve, which in theory is what should happen. A few belated deaths may occur from failure of the kidney to recuperate while repeated gestation in these cases is of course deleterious.

Amniotic Hydrorrhea with Expulsion of an Extramembranous Fetus 103 Days after Rupture of Membranes.—Weymeersch (*Revue mensuelle de gynécologie et d'obstetrique*, 1919, xiv, 214) reports this case which occurred in a woman aged twenty-two in previous good health. Her last menstruation was during the first week of May, 1915, and she expected her confinement about the middle of February. When about four months pregnant in the latter half of September, while riding in a street car, she felt the escape of a great quantity of fluid by the vagina. This was colorless and the accident was not accompanied by any pain. The woman saw her physician who reassured her. In the meantime the water, still escaping, had taken on a pinkish hue. The flow showed no tendency to cease and patient accepted it as a fact. She did not visit the author until December. He found the fetus alive and made the diagnosis of amniotic hydrorrhea. On January 2 uterine contractions set in and two days later or 103 days from the date of the first escape of fluid labor began in earnest. It lasted for twelve hours and patient gave birth to an otherwise sound child with persistent foramen ovale, which survived eleven hours. The afterbirth was very large, weighing 1200 gm. There were no evidences of syphilis. Similar cases of extramembranous fetus with amniotic hydrorrhea have been reported in France by Bar, Maygrier, Dubrisay and Brouha.

Cerebral Hemorrhage of the New-born.—M. Warwick (*Amer. Jour. Med. Sci.*, 1919, clviii, 95) says that cerebral hemorrhage in new-born infants is often a complex disease syndrome giving rise to diverse clinical symptoms, modes of death and pathological findings, and that it is not brought about by any single cause but by an interrelation and interaction of a varying number of causes which may be found in the circumstances governing labor in the condition of the mother or of the child. Several causes may often be present, any one of which in itself might have been the responsible factor. Cerebral hemorrhage of the new-born is frequently found, occurring in 50 per cent. of thirty-six deaths of young infants at the University Hospital. The condition is brought about by trauma in normal or rapid deliveries, by congestion or asphyxiation in slow deliveries or by disease of the child itself. The so-called "hemorrhagic disease of the new-born" is a much neglected but very important cause of cerebral hemorrhage in infants, occurring in 44 per cent. of the deaths of series. Forceps deliveries, advanced age of the primipara mother and syphilis probably do not play as important a rôle in the etiology of this condition as was formerly supposed.

Accidental Hemorrhage.—W. Smyly (*Dublin Jour. Med. Sci.*, June, 1919, 257) reports two cases, which, with three previously recorded, he thinks are sufficient to prove that many if not most of the cases of severe accidental hemorrhage are due to conditions not only closely allied to but identical with those which cause eclampsia.

Newer Methods of Cesarean Section.—J. B. DeLee (*Jour. A. M. A.*, 1919, lxxiii, 91) says that the special indications for the classic Cesarean section are usually, the necessity for instant delivery, the desire to remove fibroids, placenta previa, when a Porro operation is to follow, and in the case of an extremely pendulous abdomen. The choice between extraperitoneal and transperitoneal methods is still undecided, but the majority of operators prefer the latter. The true extraperitoneal operation has the distinct advantage that it protects best against peritonitis—infection, if it occurs, being less dangerous in the connective tissue, and drainage being easily procured. Its advantages are that it is often hard to separate the peritoneum and the bladder from the uterus, the peritoneum often and the bladder occasionally tearing through. The uterine incision sometimes extends down into the base of the broad ligament where lie the large veins and ureter; also the delivery of the child is technically more difficult and its mortality slightly higher. For these reasons, and since the results for the mother are almost as good, the transperitoneal operation is most often selected. In the presence of insuperable mechanical disproportion, that is, the absolute indication for Cesarean section, therapeutic abortion is absolutely contraindicated. At full term we have four courses to select from: the classic Cesarean section, the classic Cesarean section with the Porro modification, the transperitoneal cervical section, and the extraperitoneal section. In clean and in suspected cases the writer recommends the transperitoneal cervical section, and in frankly infected cases, the extraperitoneal section or the Porro Cesarean section. In the treatment of labor in pelves that are not absolutely contracted, unless the patient positively demands the induction of premature labor, allows the pregnancy to go to term. Just before labor begins he determines by careful rectal and abdominal examination whether or not there is any chance that the fetus will pass through the pelvis. If it is highly improbable, he does the transperitoneal Cesarean section as soon as labor is well under way. If there is reason to believe that the head will go through, he gives the patient a real test of labor. If delivery is impossible, in primiparas, he does the transperitoneal section, in multiparas either this or pubiotomy, being guided by the individual conditions present. This statement holds also for cases in which infection is suspected. In frankly infected cases he recommends the extraperitoneal method with free drainage in young women, and uterine extirpation in old. If Cesarean section is done for placenta previa the writer prefers the classic operation. In abruptio placentæ, the transperitoneal is the method of choice, unless great speed of delivery is required to save the child. For neglected shoulder and breech presentations, prolapse of the cord, and in the innumerable other obstetric complications, the new operation will find a restricted field of usefulness.

Intraperitoneal Rupture of the Bladder during the Puerperium.—Ten cases of rupture of the bladder in women have been reported, and these are said by W. Kohlmann (*U. O. Med. & Surg. Jour.*, 1919, lxxii, 47) to have been mostly caused by complication with retroflexion of the uterus. The two cases which he reports occurred in women recently delivered, one normally, the other by Cesarean section. In the first case the hospital chart showed no systematic attention to urinary function. The patient complained of abdominal pain on the third, fourth and fifth days after labor. The distended abdomen was then palpated and rupture of the bladder occurred. The second case was a Cesarean section for eclampsia. This was followed by abdominal pain and distention but nothing to suggest the time of rupture. Infection of the abdominal wound, offensive vaginal discharge and drainage of profuse straw colored fluid through a tube introduced into the peritoneal cavity were followed by death. The important point which these cases would seem to impress is the absolute necessity for careful and systematic observation of the urinary function in the puerperium as well as in postoperative cases and those of serious illness.

Episeotomy.—C. G. Child (*Med. Rec.*, 1919, xcvi, 142) has performed episeotomy 63 times in 153 consecutive deliveries. He says that the operation consists of enlarging the outlet of the birth canal by an incision made with a knife, or preferably with scissors. The site of the incision is on one side of the vulva, and should go through the skin, subcutaneous and adipose tissue, down to the levator muscle. The division of the muscle should be carried to a point just sufficient to allow the birth of the head. The extent necessary is gauged as the head advances with each pain. In some primiparæ, in whom the introitus is over-small or the head over-large, bilateral episeotomy may be necessary. In breech extractions, where plenty of room is so often necessary for the release of extended arms, or to incise a cervix that has contracted around the neck of the after-coming head, no chances should be taken with a small incision. For suturing the incision interrupted silkworm-gut sutures are the best, and these should be passed deeply from without inward, taking up all tissue as far as the vaginal mucosa. This latter is then united by a continuous suture of No. 2 chromic catgut. All sutures can be introduced while waiting for the expulsion of the placenta when the patient is still under the anesthetic, and their introduction is greatly facilitated by the placing of a medium sized laparotomy pad in the vagina to prevent the obstruction of the field of operation by the blood coming from the uterus. These sutures ought not be tied, however, until after the delivery of the placenta in case it should be adherent, making a manual removal necessary.

Pregnancy and Labor Following Amputation of Cervix Uteri.—Citing one case in which complete amputation of the cervix was followed by cicatricial rigidity which necessitated Cesarean section, and another which was followed by three miscarriages, O. S. Pavlik (*Surg., Gyn. & Obst.*, 1919, xxix, 172) says that the cervix acts as does a puckering string to a bag, or as a stopper to a bottle, so far as it relates to the gestating uterus, and its removal subjects the patient to the theoretical and, as the cases seem to show, to an actual danger of uterine evacuation at all stages of pregnancy. The danger of premature delivery which affects at least 50 per cent. of the cases is seriously added to by those tissue changes which inevitably take place in the amputation stump. Studdiford recommends as a routine that amputation should never extend higher than ½ inch below the internal os in order to anticipate the alterations. Even with this modification it seems to the writer that Leonard's conclusion must be fully endorsed; namely, that serious dystocia will commonly arise from the cicatricial rigidity that follows the operation, and that the operation should not be performed on women during the child-bearing period unless more conservative measures have failed, and further if the operation should be done during the child-bearing period, the patient should at the same time be sterilized.

Radical Cure of Pelvic Deformity.—H. Jellett (*Surg., Gyn. & Obst.*, 1919, xxix, 117) prefaces his argument with statistics of thirty-five pubiotomies performed at the Rotunda Hospital by his predecessors and himself to show the safety of this operation. Of thirty-five women, two died. The first died of heart-failure immediately after delivery, autopsy showing fatty degeneration; the second died of acute miliary tuberculosis several weeks after labor. Five children out of thirty-six were born dead. One of these was the second of twins; the other was hydrocephalic. In two cases injury to the bladder wall resulted. In one immediate cure followed suture of the tear.

In the other, the tuberculous patient, it was not detected, so was not sutured. Pubiotomy is not merely a method of terminating a difficult labor; it is rather a means of effecting a radical cure of pelvic contraction. In forty-five labors previous to pubiotomy, six children were delivered alive spontaneously and four by forceps; in twenty-two labors after the one at which pubiotomy was performed, eleven children were delivered alive spontaneously, six by forceps and two by a second pubiotomy. The death of one of the three born dead was due to placenta previa. Pubiotomy is indicated in both the first and second degrees of contracted pelvis. Failure to mold in first degree cases often ends in forceps application when the head is above the brim and even failure to deliver by this means. Perforation is then the only resort if indeed the child is not already dead. In later labors the danger recurs or increases as the children become larger. Pubiotomy is not an alternative to Cesarean section. Once it is admitted that pubiotomy is safe and produces permanent cure it takes its place, while Cesarean section is only a means of terminating a single labor. Pubiotomy should never be postponed willingly to the end of the second stage but should be performed as long before delivery as possible. The more complete the recovery of the soft parts from the trauma of the operation, the less likely is laceration to occur during delivery and the smaller its effects if it does occur. If, in a primipara, the existence of contraction is not recognized until in or near labor, it may be advisable to deliver by Cesarean section and perform pubiotomy later for the benefit of future labors. Every effort should be made to prevent bony union of the cut surfaces. It can best be avoided by refraining from prolonged use of the pubiotomy belt, by allowing the patient's early movement, and by getting them out of bed as soon as possible after operation. If this fails it might be advisable in other cases to remove the fragment of bone between the saw-cut and symphysis, or bring pubic fat between the cut surfaces, or possibly to still further increase the size of the pelvis by a bone grafting operation if subsequent pregnancies seemed probable. It is absolutely essential that accurate measurements of the internal diameters of the pelvis be made before undertaking pubiotomy, so as to exclude such degrees or types of contraction as cannot be overcome by the operation. The lowest limit is 7 cm. in the case of a flat pelvis and 7.5 cm. in a generally contracted pelvis. Bumm's sharp pubiotomy needle may stick into the bone or perforate the bladder. The writer uses a blunt Doederline needle the elbow of which has been straightened so that it carries its curve in the continuation of the handle. This necessitates nicking the skin at the points of insertion and exit. If done just before delivery the subcutaneous method is preferable; if at the time of election, it is better to make a small incision above the pubis, separate the bladder from the pubis and pass the needle from above downward. If the subcutaneous method is adopted, a catheter should be passed into the bladder as soon as the needle is introduced. If the urine obtained is bloody a little fluid should be injected into the bladder and the anterior wall examined with the catheter to detect by touch and sound whether the needle has entered. If penetration occurs the operation must be temporarily abandoned and later done by the open method on the opposite side. A small puncture is probably of little importance if care is taken to empty the bladder at short intervals for a week. General practitioners are urged to aid in diagnosis of pelvic contraction early in pregnancy. Sharp saws avoid unnecessary injury of soft parts. A pubiotomy belt should be applied as soon as the operation is done and kept in place during labor, to avoid undue separation, yet not so tight as to prevent necessary separation. It may be taken off as soon as the bones tend to remain in fairly close apposition, usually about the fourth or fifth day. Movements of the patient which do not cause pain may be allowed. Local tenderness usually shows infection. The patient, if convalescing normally, may leave bed after the tenth day. Slight stiffness in walking soon passes off.

The High Cesarean Section.—Bar (*Archives mensuelles d'obstetrique et de gynécologie*, 1919, viii, 49) has now operated 275 times in this manner. He has always refused to intervene in cases presenting the slightest evidences of infection and also when the woman was in labor, the indication being to operate just after the debut of the latter while the membranes were as yet unruptured. In his last ninety-seven cases he operated twelve times after labor was under way, so that this teaching is rather an ideal to be sought than a measure which is always practicable. The incision is always practised high up on the anterior aspect of the uterus extending to the fundus. Of late he has sought to remove the fetus within the membranes. A button hole is first made, the finger loosens the membranes and then the actual incision is made. Once in a while the membrane tears as when the placenta has a low insertion. He no longer tampons the cavity for fear of secondary hemorrhage. He no longer fears hemorrhage during operation for while it occurs in a certain, proportion sufficient to call for suture he has seen no untoward consequences. Ergotine is used as a prophylactic. In the authors, series of ninety-seven cases operated upon during the past five years every mother left the hospital nursing her child. This record compares favorably with others in recent years although in 1905 Schauta established the remarkable figures of 128 consecutive cases without mortality. The figures taken from miscellaneous sources give a mortality of from 2 to 12 per cent.

B. GYNECOLOGY.

Tuberculosis of the Cervix Uteri.—G. A. Moore (*Surg., Gyn. & Obst.*, 1919, xxix, 1) reports a case of tuberculosis of the cervix in a woman of twenty-seven years, who gave no symptoms excepting slight hemorrhage after coitus. Although examination showed no apparent abnormality of the adnexa a vaginal hysterectomy was performed on account of the known frequency of involvement of the tubes in such cases. Tubes, fundus and cervix were found to be affected, the process being oldest in the tubes. A year later there seemed to be a recurrence in the vaginal vault. Primary tuberculosis of the cervix is very rare; only fifteen or twenty cases have been reported. Of the secondary cases about 150 are on record. Undoubtedly many cases are diagnosed as cancer or syphilis. Probably the most common route of infection of the cervix is by the blood stream; the next most frequent is by direct extension from the tubes, ovaries or uterus or by secretion from these organs passing over the cervical mucosa. In coitus infection has been brought about by use of sputum of a tuberculous husband as a lubricant. Four varieties of lesions of the cervix are commonly mentioned and two rare forms. The former are: miliary, interstitial, vegetating and ulcerating; the latter are the catarrhal form of Schutt and the inflammatory form of Cotté. In cases of localized tuberculosis of the cervix symptoms are rare. The most common is leukorrhea. In the early stages the discharge is slight, mucopurulent and inoffensive. During the later stages as ulceration increases, the discharge becomes profuse, purulent and very offensive. Slight bleeding after coitus is fairly common. Clinically, the diagnosis is difficult for all types and stages of the disease resemble carcinoma. Tuberculosis occurs most frequently during the period of sexual activity. Often conditions to be differentiated are simple erosion of the cervix, cervical herpes and syphilitic lesions. The treatment is complete eradication. The method requires consideration of the patient's general condition. If there is an active process elsewhere in the body excision will be of no benefit. If the patient desires to have children and the general physical condition will permit it, a conservative operation should be done provided the uterus and tubes are not extensively involved. If child-bearing is not to be considered, panhysterectomy should be done whenever there is reason to believe that the uterus or tubes are involved. If the tuberculous lesion in other parts of the body is healed or dormant and the cervical lesion is progressing a conservative or even a radical operation may be indicated.

Experimental Study of Abdominal Adhesions.—M. Behrend and N. S. Rothschild (*Penn. Med. Jour.*, 1919, xxii, 537) believe that the majority of adhesions are formed as the result of the contact of the sensitive endothelial lining with the various chemicals used in the local preparation. In these days of asepsis infection forms a small minority. The less the abdominal contents are handled the fewer the adhesions which will naturally result.

In the experience of the writers iodin gives the densest adhesions; alcohol 95 per cent. showed adhesions in all animals used; dichloramin-T gave the best results both in the primary operation and afterward in the prevention of the reformation of adhesions.

Alternating Periodic Ovarian Swellings.—E. Ries (*Jour. A. M. A.*, 1919, lxxiii, 100) attempts to explain certain abnormal conditions of the ovaries which have been reported in isolated observations. These are of four types. The first is the vanishing tumor. A cystic tumor at the side of the uterus, of the size of a hen's egg or larger, suddenly breaks under the examining finger. The patient may have had some irregularity of menstruation and some pain. Operation shows only a ruptured corpus luteum cyst of one ovary, with more or less lutein layer in its walls, and a little serous fluid. The second type is the false uterine pregnancy. A soft cystic tumor at one side of the uterus is found in a woman whose menstruation has been more or less irregular. This hemorrhage may suggest ectopic gestation. Operation reveals only a corpus luteum cyst in one or both ovaries, usually with a thick lutein cell layer, often with chocolate-colored hemorrhagic contents. The third type is the tumor which disturbs the peace of the community. Having some abdominal pain with or without menstrual disturbance the patient consults three physicians successively, their respective diagnoses being ovarian cyst on the right side, no tumor, and left-sided ovarian cyst. The fourth type, which the author described six years ago, is alternating periodic ovarian swellings. He has studied over a dozen cases of this group which really includes and explains all the others. He reports three of these which he has had under observation for from three to eight years, finally operating upon two of them and finding corpus luteum cysts. One patient had, while observed, thirteen right and seven left swellings of which four involved both sides simultaneously. The second had seven on the right and four on the left, twice on both sides simultaneously. The symptoms in these cases were a feeling of fulness in the hypogastrium, a bearing-down sensation, backache and in the first case at one time pain extending into the knee of the affected side. In the third case the woman had had an operation for prolapse and sterilization. She had flowed for a month without pain, had felt nauseated and fullness of the breasts and had recently passed something like a membrane. Operation showed not tubal pregnancy but corpus luteum cysts of both ovaries, containing chocolate-colored fluid, one almost the size of a fist, the other of a hen's egg. The larger ovary was removed; an apparently healthy portion of the other was left after resection. Three months later a cyst the size of a fist was felt on this side: This the writer ruptured by sudden bimanual pressure. It caused no pain and no unfavorable symptoms followed. If a patient who has been observed a sufficient period of time to establish the diagnosis on a sound basis, suffers from these alternating swellings and has considerable disturbance in consequence thereof but for some reason should not be operated on, this intentional rupturing of these cysts presents a simple method of relief, if only temporary. Otherwise, if the swellings continue to return, and especially, if ultimately the ovary does not go down to normal size between the swellings, but remains large and produces pressure symptoms, then operation is indicated, in order to give permanent relief. In the first two cases the ovaries were embedded in adhesions, and this suggested that the presence of the adhesions prevented the follicle from rupturing freely. The findings in the third case prove conversely the possibility of cyst formation without any adhesions. However, of the cases that did not come to operation, of which a number have been observed for years presenting alternating swellings, a large majority presented adhesions.

The age at which the swellings occur was as low as twenty-five and as high as forty-eight.

The relation of the swellings to the monthly periods is commonly so that the swelling is first noticed from eight to fourteen days before the menstruation and has more or less disappeared within three or four days after the menstruation. This periodicity caused the addition of the term "periodic" to the nomenclature of the clinical entity. The microscopic findings in the organs removed in my operations resemble the descriptions of chronic oöphoritis contained in the literature, but the author fails to see any signs of inflammatory changes in the ovaries themselves, while the adhesions found on the outside of these ovaries can readily be explained independently of the ovarian condition, for instance, in Case I by the presence of an old appendical peritonitis. The changes going on in these ovaries are dependent on the corpus luteum. Their effect may be simply due to the size of the cyst producing pressure symptoms, or, what is equally important, the effect is that of faulty corpus luteum function. As soon as the corpus luteum becomes pathologic, we have irregularity of menstruation in one or the other direction.

Nonpuerperal Abscess of the Ovary.—Chomé (*Archives mensuelles d'obstetrique et de gynécologie*, 1919, viii, 113) reaches the following conclusions from the study of a series of seventeen cases of this affection: it is in the great majority of cases an abscess of the corpus luteum, due to direct infection at the time of rupture of the follicle. In these abscesses the balance of the ovary is intact. The abscessed ovary is surrounded by infected foci of various kinds. The author has invariably found the gland adherent in these cases although others seem to have found it free in the majority of abscesses. It is especially when the organ is adherent to the intestine that infection is favored, and in the author's material intestinal adhesions were present in thirteen of seventeen cases. In cases of tubal adhesions the infection proceeds from the tubes. One of the author's cases was tuberculous and in 2 others the cause was in doubt while all of the others were of gonorrheal origin, actual or presumed. In all but one case the left ovary was the seat of the abscess but in two the affection was bilateral. In a solitary case the right ovary alone was involved. In six of the seventeen cases the ovary alone was involved, the tube being intact while in 11 the tube was also involved. There is some obscurity concerning the rôle of the B. coli which apparently was present in some of the cases of intestinal adhesions, but this germ is not mentioned under the subject of etiology. The proofs that the lesion is limited to the corpus luteum is found in the luteinic membrane with which the abscess cavity is lined and in the intact state of the remainder of the ovary.

Treatment of Uterine Myoma.—A. Stein (*Jour. A. M. A.*, 1919, lxxiii, 95) does not deem the röntgen-ray treatment of uterine myomas a safe procedure for the following reasons: It is impossible to determine whether the growth to be dealt with is a benign or a malignant tumor. His statistics of 120 cases show that about 50 per cent. of all myoma cases are complicated by pus tubes, hydrosalpinx or hematosalpinx, acute or subacute appendicitis, ectopic pregnancy, etc. In young women who have not reached the menopause, the röntgen ray is almost certain to destroy the function of the ovaries, resulting in a premature menopause. The continued application of the röntgen ray is apt to have a deleterious effect on the intestinal mucosa. The writer's experience has shown the surgical treatment to be the safest (with only 1 to 3.5 per cent. mortality), quickest, and most reliable method at our command.

Occurrence of New-growths in the Abdominal Wall after Laparotomy.—Balfour has reported seven cases of desmoid tumors which were observed in the Mayo Clinic. Of these, two had occurred in laparotomy scars. To these apparently unique cases W. C. Danforth (*Surg. Gyn., & Obst.*, 1919, xxix, 175) adds two new-growths in laparotomy scars which he has seen within a year. One of these was a true desmoid, the other a fibrosarcoma. Fibrous tumors of the abdominal wall are not uncommon. Pregnancy seems to be a definite predisposing factor. They occur in women in the ratio of seven to one in man. The diagnosis of these tumors is as a rule not difficult. They occur most frequently in the sheath of the rectus and upon the aponeurosis of the oblique muscles. They are usually irregularly round with rather sharply defined borders and when being grasped are not movable upon the underlying tissue. Upon being forcibly moved the underlying abdominal wall moves with them. The most characteristic point is that when the abdominal wall is under tension they disappear, while when it is relaxed they become easily noticeable. They are ordinarily small but have been noted as large as the size of the fetal head. Upon diagnosis the mass should be excised immediately. The excision should include the removal of that portion of the aponeurosis which forms the base of the tumor. This occasionally means that a considerable area of the underlying aponeurosis must be sacrificed. In case so much is removed that closure is rendered difficult, closure with transplantation of fascia ordinarily taken from the fascia lata must be considered. Excision of this growth should be followed by careful microscopic investigation in order that the occasional occurrence of malignant growths such as the one contained in this report may not be overlooked.

Technic for Bloodless Hysterectomy.—B. Van Hoosen (*Surg., Gyn. & Obst.*, 1919, xxix, 196) describes an operation for which he claims as advantages: preservation of integrity of entire pelvic circulation, especially of ovaries and ligaments. The sympathetic nerves and ganglia about the uterus are not traumatized, preventing shock and subsequent neurosis. The position of the bladder and the ureters is undisturbed and they are not liable to traumatism. The broad ligaments are left in their normal condition to maintain a division of the pelvis into anterior and posterior cavities, and to serve as a support to the small intestine when the patient assumes the standing position. In this way the patient is saved from the distressing symptom, backache. This technic removes the chief causes of mortality following hysterectomy while bringing about other advantages; namely, freedom from neurosis, absence of backache, and, if the patient has not reached the menopause, preservation of the menstrual function. While the uterus is drawn up by an assistant, the operator places the index finger of the left hand under the round ligament and the thumb of the same hand under the ovarian ligament, at the same time retracting the broad ligament from the body of the uterus. With the right hand an 8-inch forceps (preferably of the angiotribe pattern) is placed on the body of the uterus from a point opposite the internal os to the tubal attachment and the forceps is closed slowly enough to allow the uterine musculature to slip to the inner side. The forceps is closed lightly without using the racquet. Another forceps is placed in similar manner internal to this and touching it throughout its length. The side opposite is treated in the same way. By this application of forceps we have pushed the uterine artery and the anastomotic branch of the uterine and ovarian artery away from the body of the uterus. The peritoneum over the uterus on both anterior and posterior surfaces is now incised, beginning ½ inch above the line where the peritoneum is intimately connected with the uterus and extending upward on each side parallel with the forceps and ½ inch internal to it. The peritoneum adjacent to the forceps on both anterior and posterior surface is lifted by undercutting with a sharp knife. Strong traction is now made in turn between the volsellum controlling and holding the body of the uterus and the forceps applied on each side and with a few strokes of the knife the uterine musculature is separated from the parametrium and the uterus is freed down to the internal os. With dissecting scissors the cervical musculature and mucosa is coned out for any distance, even to the external os if so desired, and lifted out with the attached body of the uterus. Neither ovarian nor uterine artery having been severed, the suturing may now be begun. The first suture is placed deeply uniting the anterior and posterior borders of the cervical cone. The internal forceps on the edge of the severed broad ligaments are now removed and the remaining forceps are drawn together and held until the cut edges on each side can be united with lock stitch the one to the other. The lateral edges are united first from the posterior surface and after removal of the remaining forceps from the anterior surface. If a generous border of peritoneum has been left there will be no surface uncovered by peritoneum except possibly at the tubal location. This can be better covered and at the same time the stump which represents a skeleton uterus can be elevated by passing a suture through each round ligament about 1 inch from the uterine attachment and by tying them together over the uterine skeleton and fixing them thereto. If the Fallopian tubes are to be removed, an 8-inch angiotribe or strong forceps is placed on the broad ligament above the ovary and close to the tube and the tube is peeled out of its peritoneal covering and the cut edge of the peritoneum is ligated *en masse*, but not including the ovarian artery. If the broad ligament has been distended by tumor growth, it may be impossible to push back the arteries by a single pair of forceps, and in this case two or even three pairs may be used on one or both sides. In these cases it is often easier to whip over the edge of the broad ligament separately on each side with a lock stitch, and later unite the sides with a running suture. If there has been a prolapse of the uterus, the broad ligaments can be whipped over separately and each V-shaped portion of the broad ligament can be drawn up through the parietal peritoneum of the abdominal wall external to the border of the rectus and united over these muscles in the central line.

Hernia of the Ovary into the Vagina Through a Colpotomy Wound.—Rouffart reports the following case (*Revue mensuelle de gynécologie et d'obstetrique*, 1919, xiv, 213): Age forty-six years, three children, the oldest twenty-four, youngest nineteen. Until a few months ago had no history of disease except migraine. The labors had all been difficult and each had been complicated, the last with inversion of the uterus. A retrodeviation remained requiring the use of a pessary. Her actual trouble was a gonorrhea recently contracted from her husband. Before that period she had never had a leukorrhea. She was admitted for a gonorrheal parametritis and in the hospital the Douglas was opened, the operation having been repeated in eight days because of fever. This second intervention was successful and she left the hospital with a purulent vaginal discharge which would not yield to treatment. Several months later she returned with a tumor in the vagina the size of a pigeon's egg. Judged by the speculum and touch examinations it might have been a sarcoma. The uterus was small and contained a few fibroids. The tubes showed a slight uniform induration but otherwise were normal. The body in the vagina was evidently a prolapsed ovary, its fellow being microcystic. After an incision high up in the vagina laparotomy was performed and the ovaries removed. The herniad ovary was seen to have been in part strangulated in the cicatrix left in the site of the colpotomy wound. The uterus and adnexa were also extirpated.

C. MISCELLANEOUS.

Intestinal Obstruction.—L. G. Dragstedt, C. A. Dragstedt, J. T. McClintock and C. S. Chase (*Jour. Exper. Med.*, 1919, xxx, 109) report their experiments in a study of the factors involved in the production and absorption of toxic materials from the intestine. They conclude that it is impossible to sterilize the intestine by the use of chemical antiseptics even when these are applied directly to the mucosa of isolated segments. The mucosa of the alimentary tract does not elaborate an internal secretion which is necessary to life, or a secretion which could be disturbed by the conditions of acute obstruction so as to account for the symptom complex of that condition. The substances responsible for the toxemia in acute obstruction are produced by the action of intestinal bacteria on proteins or their split products. An injury to the intestinal mucosa, particularly that resulting from disturbances of the blood supply to the intestine, greatly facilitates the absorption of these poisons. The work of Hartwell and his associates and that of Murphy and Brooks on this point are confirmed.

ITEM.

MATERNAL WELFARE WORK IN FRANCE TO CONTINUE.

The Maternal Welfare Work established in France, under the auspices of the Red Cross Children's Bureau, by Dr. F. L. Adair, Associate Professor of Obstetrics and Gynecology in the University of Minnesota, Minneapolis, is to continue. The plan of prenatal consultation established by Dr. Adair is to serve as a model in the School of Puericulture of Child Welfare, which is to function under the American Red Cross Children's Bureau coöperating with the Medical College of Paris.

In September, 1918, Dr. Lucas, Director of the Children's Bureau, began an investigation of prenatal care in Paris. He requested that the work be organized systematically under a definite head and Dr. Adair was given the commission.

In the few months, during which the work was established in two sections in Paris, the population of which numbers 600,000, about 500 prospective mothers were cared for in the consultations and also in their homes, which means that this number of families were approached in both a medical and social way.

In the hospital Social Service work, which was conducted for only two months, the results were most gratifying and much was accomplished. Over 500 prospective mothers were interviewed and advised how best to meet their new problems of living. The response from the people was pathetic, showing how great had been their need of guidance.

The women were found by securing from the Mairie the list of those who had applied for an "allocation;" by establishing a liason with the maternity hospitals of the neighborhood to secure names of women registered in their consultations who lived in the quarters where prenatal work was being conducted; by establishing friendly relations with the "sages femmes" of the neighborhood and by helping them to give their patients better care; by references from such other agencies as the Rockefeller Commission and Children's Welfare work and by one woman bringing another to the consultation. Through these agencies about 800 women came to the prenatal consultations during the first six months.

'An organization was formed to carry on the medico-social work installed in the hospital and an attempt was made to form a society of social visitors who would be capable of teaching the mothers the proper methods of caring for themselves, of making preparations for the birth of the child and giving other information necessary for persons in their condition.

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ORIGINAL COMMUNICATIONS.

INDUCTION OF LABOR BY MODIFIED CHAMPETIER DE RIBES BAGS.*

BY

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THE field for the induction of labor has been markedly extended since 1738, when Mary Donnelly, by introducing premature delivery, first sought to avoid the tremendous mortality which then attended labor at term in contracted pelves. This is well shown in Jewett's review in 1907 in which he stated that there were between thirty and forty indications for such procedures. The relative value of this type of treatment is not yet settled, however, not so much from lack of agreement as to proper indications, as from inability to choose consistently a method which is certain and harmless.

Various procedures have been championed from time to time and later have been abandoned as not fulfilling these indications. Fasbender in 1906 in his "Geschichte der Geburtshülfe," devotes six pages to mere mention of the names of various methods which have been described. But in quite recent time they have been superseded almost without exception by the Champetier de Ribes bag or one of its modifications.

Yet even with the greatly improved results which have attended the use of the elastic balloon there has remained considerable difference of opinion as to their practicability. Some believe that the

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*From the Woman's Clinic, University of California Hospital.

NOTE.—The Editor accepts no responsibility for the views and statements of authors as published in their "Original Communications."

induction of labor by any means is so difficult and uncertain a proceeding that it should not be undertaken save for most definite indications. The excellence of individual results from more purely surgical measures have made many abandon it entirely. Others, however, with apparently equal authority view the procedure with equanimity and believe that success or failure is largely a matter of technic and hold that the time has now come to add to the already lengthy list of accepted indications, the induction of labor in normal pelves at term without other qualifying indications.

As far as I can ascertain, it remained for Wright of Toronto to first advocate this indication which he did largely from the standpoint of the patient's convenience and expense. He states "if we can perform the operation in such a way that it causes no danger, or at least very much less danger to the patient than the prolongation of the pregnancy involves, then we must conclude that such interference is not only justifiable but advisable." The cases which he reported were too few, however, to do other than to suggest forensic discussion and the paper created only a limited interest.

The question, however, has been brought squarely before the profession by Reed in a report of two series of cases of 100 each reported in 1916 and 1918. Few papers have excited more interest or criticism, yet as far as I can determine no one has reviewed their own series of cases from Reed's point of view, nor tabulated the literature so as to bear upon the many points upon which his work is based. This is all the more remarkable since Reed's papers have been the target for much abuse in spite of the fact that the induction of labor at term without other indications than fear of its prolongation is and long has been commonly practised in selected cases in nearly every city in this country.

Reed developed his theory on Von Winckel's, showing that 71 per cent. of babies weighing more than 8½ pounds are postmature and that the labors in these cases are frequently prolonged and difficult. He states moreover that it is well known that many of these post mature babies die *in utero* before the onset of belated labor, while the not unusual infection and mutilation of the mother brings about a protracted if not permanent disability. By a judiciously timed induction, however, when the fetus is mature as suggested by a careful history and controlled by intrauterine mensuration, the child will pass through the pelvic canal when it is not of size sufficient to cause extreme difficulty or necessitate operative trauma. The mother is spared from four to eight hours' suffering and enjoys in consequence so little impairment of her immunity that she is able to withstand many agencies to which she might succumb when in a weakened or exhausted condition. This relief, moreover, is usually financial as well as mental. There is no fire-alarm trip to the hospital at some uncanny or inconvenient hour after a nurse has been sitting about the house for weeks. There is no difficulty in obtaining room for a patient in a crowded hospital and neither the patient nor the physician is caught unawares.

There is little use in discussing the patient's relief were a labor induced at term at least as safe and happy as when brought on by nature. It is self-evident.

Nor is there any question that we may determine the end of term by intrauterine measurements alone. All obstetricians trained to the work daily use Ahlfeld's, McDonald's, Perret's or Stone's methods for intrauterine measurements, and rarely fall in error even in the absence of an accurate history. When controlled by reliable data as to the cycle, last period, and onset of nausea there should be no failure in the selection of a safe time for interrupting a process which may terminate normally at any time between the 240th and 330th day.

All do not agree, however, as to the correctness of the statements accredited to von Winckel. In a study of 821 babies of 4000 grams or more in Leipsig, Enge found that pregnancy continued for more than 290 days in but 29 per cent. of all cases, giving accurate histories, and in only 11 per cent. of the cases with a known date of conception. Nor does it appear that the children of this size are common, since they constituted less than 4 per cent. of 46,269 births in the clinics of Dresden, Munich and Leipsig, and only 4.3 per cent. of our present series of 2750 cases at the University of California Hospital. In our series, there were 161 babies of 8½ pounds or more. One hundred and eight of these were born at term or before, and fifty-three thereafter. The average duration of labor was twelve and one-tenth hours, fifteen and one-tenth hours for those one week overdue, nineteen and six-tenth hours for the sixteen cases two weeks late, ten and two-tenth hours for nine cases three weeks prolonged, and twelve and two-tenth hours for the eight that came one month overdue. Labor lasted moreover for sixteen hours or more in but 15 per cent. of cases, on the whole a most favorable comparison with Lynch's series of spontaneous deliveries with average duration of twelve and four-tenth hours for 1755 normal pelves and fifteen and two-tenth hours for 337 contracted pelves.

Our review does not suggest that operative delivery is frequently demanded in this group of cases. There were only four forceps in our series of 161 cases (2.5 per cent.)—two midforceps for transverse arrest and two low forceps. One child was delivered by Cesarean for pelvic indications. There were no versions. Operative delivery was employed in only 5⅓ per cent. (44 times) in Enge's series of 821 cases. This is all the more astonishing since 8.4 per cent. of his total series had contracted pelves, 80 per cent. of which were flat, the common pelvis in which there is a large child. Forceps and breech extractions account for half of the obstetrical operations, and the remainder at present time would have been treated by Cesarean section as an elective procedure in contracted pelves. As it was there were ten perforations, seven Cesareans and two symphyseotomies in the series, not astonishing for a set of cases between 1885 and 1901 in which there were

10 generally contracted pelves.
36 simple flat pelves.
17 rachitic flat pelves.
1 generally contracted flat.
2 transverse contracted Roberts.
2 oblique coxalgic.

Nor do we find that fetal death from over-retention is of common occurrence since Sendykowski was able to find but fifty cases of true delayed or missed labor in the literature of thirty years and in some of these the child was living. Our review therefore forces us to the belief that Reed's claims depend upon the results of his series of induction cases.

Attempting to make his study as comprehensive as possible, Reed sought to induce labor in consecutive cases. The first 100 were consecutive admissions. Approximately two-thirds of his entire clinic while the study was in progress had labor induced by bags. The average duration of labor for the 200 cases was eight hours, a record without parallel in the literature. The longest labors of the series were thirty and twenty-eight hours and the shortest were fifty-five minutes and one hour, twenty-five minutes for primipara and multipara respectively. There were twelve fetal deaths computing to the tenth day, yet by proper exclusion he reduces those to one. Possibly, however, we should charge five deaths to the method although we will consider this point under fetal mortality. There were two maternal deaths, one a placenta previa and the other a pneumonia eight days postpartum. Operation was utilized for delivery in forty-one or 20.5 per cent. of cases, thirty-nine forceps and two versions and extractions. Most of the forceps deliveries were elective since it was the deliberate intention of the study to complete labor as rapidly as was consistent with safety in expectation of preserving the patient's immunity. Seven cases of the first series of 100 had post-partum temperature, in only one of which was there reasonable possibility that it could be due to the bag. The series included nearly all presentations and positions, since no attempt was made to select cases other than to be certain that they were at term.

Judged by his results as to the duration of labor, it would appear that Reed has proven his points since there are no series of induction of labor by bags in American literature that present results comparable to his. Although our literature fairly teems with papers on the induction of labor few authors have presented their work in tables suitable for our present study. These, moreover, do not separately tabulate their results in their cases without indications other than term, since they chiefly comprise material with classical indications. Thus Voorhees in 1905 reports on the induction of labor by bags for classical indications in 101 cases, forty-eight primipara and fifty-three multipara, percentages almost identical with those of Reed's. The average duration, however, was twenty-five hours, with extremes of one hour and fifty minutes, and seventy-nine and three-fourths hours, computed to the complete dilatation of the cervix instead of the actual delivery. This would somewhat increase the average since our other review computes from the insertion of the bag to actual delivery. Brodhead, in 1912, also tabulates a series of 133 cases whose labors were similarly induced for the same group of indications. The average duration of labor was eighteen hours, twenty-two hours, nine minutes for the primipara of the series and fifteen hours, fifty-two minutes for the multipara. Seventy per cent. of the primipara, however, were delivered within fourteen hours and 75 per cent. of the multipara within ten hours. The bags failed to induce labor in eight cases. Thirty-four of the series were at term or overdue without other indications. The extremes of labor ranged from two hours, fifty minutes to seventy-nine hours, fifty-two minutes in primipara and one hour, seven minutes to seventy-seven hours in multipara.

In 2750 house cases at the University of California Hospital, bags have been employed for more or less classical indications to induce labor in sixty cases. The average duration for these has been twenty-three and one-half hours—twenty-seven hours average for the primipara of the series and twenty hours for the multipara. The shortest labor was four hours in a placenta previa at term, the longest ninety-four hours—the first case of the series not well followed up, which was treated by four bags with hours of freedom from pain between each application.

The question naturally arises as to whether differences in technic accounts for the variation between the figures of these three series and the statistics of Reed. The bags were not weighted in the Voorhees and Brodhead series as a routine, yet occasional tractions were made in selected cases. The bag was weighted, however, in forty-nine of our sixty cases sufficiently to keep it tight against the cervix. Failure to maintain the pains after the bag was expelled undoubtedly accounts for some delay, yet the great majority of our cases were thus followed. The lack of uterine irritability in our series is evidenced in that 79 per cent. demanded treatment because of cessation of pains or weak and inefficient contractions. The cervix was stretched slightly one or more times in 31 per cent. of cases. The membranes were ruptured in 17.8 per cent. of cases shortly after the bag was expelled; and pituitrin was given in 30.3 per cent. in contrast to Reed's figures of 45 per cent.

The bags remained in the cervix for an average of thirteen hours although the majority were expelled within ten hours. This is most important since Reed's average was three hours, twenty minutes. The bag was expelled spontaneously in all but three cases. Twice it was withdrawn because of the onset of convulsions and twice because labor did not ensue after it had remained in the cervix for thirty hours. The average time before pains followed the insertion of the bag was five hours, ten minutes, compared with Brodhead's average of nine hours, forty minutes, and McDonald's of six hours. Reed states "they began almost immediately, from a few minutes to half an hour." They began almost immediately in eleven of our cases.

It appears likely therefore that differences in the irritability of the uterus must account for the variations in the figures of these series. We have tried very generally to induce labor by castor oil and quinine and have allowed considerable time to intervene before resorting to bags. It is more than possible that we have excluded by this means nearly all cases with an irritable uterus. A detailed study of our cases forces the belief that even after such exclusions it would appear also that the uterus was less irritable both in premature cases and in all toxemias than in the other cases at term with the exception of placenta previa. Thus pains began after the insertion of the bag on the average four and two-tenth hours in twenty-two premature cases and in one and nine-tenth hours in thirty-eight full-term cases. Moreover the bag was expelled on the average in nineteen hours in premature cases and in twelve hours at term. Attempts to induce labor prematurely by castor oil and quinine in our work has been attended almost uniformly with failure. While the series of toxemias at term and normals overdue is too small to be other than suggestive (31 and 19), we find that the average duration of labor was eight and six-tenth hours longer in he toxemias. Similar evidence is afforded by our castor oil group of 300 cases. Sixty-nine per cent. of cases over due or at term fell into labor after castor oil and but 59 per cent. of toxemias thus responded.

Contrasting our series with Reed's we find that it took four or five hours longer before pains followed the bag in our cases than in his and that labor in his group was ended on the average before the weighted bag was expelled in ours. Since we both used the same technic, we cannot ascribe these variations to other than the differences in the type of material. It appears, therefore, that the differences between our series and Reed's is largely due to variations in the irritability of the uterus. Space is not available for a discussion of the causes of this phenomenon, yet it has long been considered as due to the menstrual congestion. It is most marked at term.

While Reed made no attempt to select his cases, many had had castor oil the night before the bag. Oil often appears to exert no influence on the uterus until the following day. Possibly some of these cases were well started toward labor when the bag was laid, since some of us believe that oil shortens the first stage.

The study of the operative interference in induced labor series strengthens our conclusions. It is usually admitted that such maneuvers are demanded in about 50 per cent, of cases. In Little's series of induced labors, operative interference was required in 51 per cent. of his cases. Brodhead had 51 per cent. operative deliveries. Kosmak in the compilation for the N. Y. Obstetrical Society gives 46 per cent. in 243 cases. Our series with 21 per cent. of cases merely due or at term, had 40 per cent. operative or, excluding the breech extractions, 33 per cent. Voorhees in his 133 cases had 38 per cent. of forceps or version. Reed's figures are 21 per cent. for forceps and version. It would appear that operative interference reduces in proportion to the number of normal cases of the series.

McQuarrie has clearly indicated the difficulties in correctly checking fetal mortality and the fact that babies do die during birth. This is also clearly shown by Eröss in 1893 who, in compiling a series of 1,500,000 deliveries in sixteen large cities of Europe, found one stillbirth to about every twenty-eight labors. In our study of

300 labors in which an attempt was made to induce labor by castor oil and quinine, there were seven fetal deaths. Two are ascribed to the nephritis of the mother, one occurred in a face presentation, one a prolapsed cord treated by version and extraction, while three resulted without known cause.

The operative deliveries in a series of labors induced by classical indications present high fetal mortality. There were eighteen fetal casualties in Voorhees series of 101 cases. Five children died during labor from reasons not ascribed to delivery. Eleven of the remainder were lost during maneuvers aimed at delivery. Brodhead gives corrected fetal mortality for his series of cases. Quite correctly like Voorhees, he distinguishes between his private practice and hospital cases. The fetal mortality was 5.3 per cent. for private work and 11 per cent. for hospital service cases.

Our own series gave 15 per cent. fetal mortality, four full term children and five premature. Two full term children were lost during versions for prolapsed cord or cord and arm. The third full term child was delivered by extraction after version to check the hemorrhage from placenta previa. The fourth fully developed child died in early labor, the mother having developed a nephritic toxemia. Three of the premature cases were delivered by breech, two were stillborn and one living two days. The fourth premature fetus died *in utero* before the middle of labor. The mother was eclamptic. The fifth premature presented by face in a central placenta previa.

Two of Reed's twelve fetal deaths were born asphyxiated to succumb several hours later. Two were bleeders, dying on the second and fourth day. One died on the tenth day from toxemia. One was premature, labor being induced by an assistant through error. One died after a short spontaneous labor. These may be excluded. Two children died from compression of the cord, two from forceps and one after forceps with head upon the perineum. Charging these deaths to the series, gives a corrected mortality of 2.5, well within an accepted limit.

The question as to whether the bag is likely to displace a head has caused endless discussion. There is no doubt but that it does occasionally so do especially if the bag is very large. Yet such changes can be readily altered by the attendant, since the size of the bag may be immediately reduced by draining some of the fluid. Moreover the primiparous head is already so molded that in order to avail itself of the pelvic accommodation it must follow the bag down and resume its original position. Whether it favors the prolapse of the cord in multipara is a point not easy to determine. Evidence, however, more than suggests a long cord as the *sine qua non* of this complication.

The question of morbidity may now be considered. Reed's point is well worth emphasis that a short labor favors immunity. It is a common experience that complete tears sutured primarily break down only in women exhausted by prolonged labor, much anesthesia and more trauma. Obstetricians who have had considerable experience with bags have long ceased to worry about infection in cases handled with good technic. That morbidity is always likely is proven by our clinic, in which vaginal examinations are restricted to very definite and compelling reasons. Abdominal and rectal examinations alone are routine, yet seventy-nine uncomplicated cases on whom no vaginal examination had been made and who had not had extensive repairs, nor vaginal nor uterine tampons, developed a temperature of 38°C., constituting 6.8 per cent. of a series of 1162 hospital deliveries. One case died six weeks later, having returned to the Hospital for an operation for lung abscess. Cultures are routinely taken for temperature of that degree irrespective of its continuance. In the great majority of these the presence of microörganisms was demonstrated.

It is most difficult to present conclusions in a work of this character. Yet we believe that we have shown that the induction of labor in normal cases at term cannot be judged in the light of cases treated with bags for classical indications since the former deals with cases of normal uterine irritability. The wide variety of cases so treated by Reed and the character of his (Reed's) results forces us to the belief that the method is worthy of trial not by practitioners but teaching institutions, since this is an age which is recognizing the need of making labor as easy as is humanly possible.

SECOND STREET AND PARNASSUS AVENUE.

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ASPIRATION AND PRESSURE TREATMENT OF UNOPENED MAMMARY ABSCESSES (PUERPERAL) WITH A REPORT OF EIGHT CASES.*

BY

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THE generally accepted treatment of mammary abscess may be said to be radial incision and drainage as soon as suppuration is determined upon. However, a method which I am using has advantages over the radial or open method, in that drainage is better maintained, practically no scar is left upon the breast and the abscess heals more quickly.

After an experience with the open method of treating these abscesses and their subsequent dressings, it seemed to me it would be practical to use a combination of aspiration and pressure. Formerly I had successfully aspirated interlobar collections of pus from the lungs and frequently I had observed the beneficial results of a pressure bandage in limiting the spread of severe lymphangitides of the extremities, therefore I began the use of this combination in the treatment of mammary abscesses.

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* Read at the meeting of the American Medical Association, Atlantic City, June, 1919.

The following are the series of cases treated:

CASE I.—Mrs. C., aged twenty-one, primigravida, pregnancy and labor were normal. Six weeks after the delivery of her child there developed a mammary abscess. For a week the nipple had been tender, but on examination no cracks or fissures were found. The abscess, 5 cm. in diameter, was situated in the lower inner quadrant of the left breast. Under novocain and suprarenal extract anesthesia, the abscess was aspirated and 60 c.c. of pus were obtained, giving a pure culture of staphylococcus pyogenes aureus. A gause pad wet with 50 per cent. alcohol solution was placed over the nipple and a bandage applied snugly to the breast, over which was put dry heat. The abscess was again aspirated in four hours and the bandage reapplied as before. Again the abscess was aspirated in six hours, again in ten hours, again in six hours, again in six hours, again in ten hours, again in ten hours, twice a day for the next two days, and once the next day, when no pus was recovered. After each aspiration the breast was carefully and snugly bandaged and the heat was applied. The breast was still kept bandaged for seven days, when nursing was resumed. A dose of five hundred million autogenous vaccine was administered.

CASES II AND III.—Mrs. N., aged thirty-one, primigravida, pregnancy and labor were normal. The milk came in on the fourth day as usual. During the third week the quantity of milk diminished. The child lost in weight. The nipples became sore, swollen and cracked, bled readily on nursing. Nursing was suspended for twenty-four hours. The nipples were washed with hot water and soap and a weak solution of alcohol on gauze applied and the breasts were supported. The child was then put on supplemental feeding and a nipple-shield was advised when nursing. Contrary to the advice given, the nipple-shield was not used. The mother said, "I could not bear to give up nursing my baby." Consequently an abscess developed in the lower inner quadrant of the left breast and when seen was about 7 cm. in diameter. Under local anesthesia the abscess was aspirated and bandaged in the usual way. The pus gave a pure culture of staphylococcus pyogenes aureus. The aspiration was repeated in six hours, again in twelve hours, again in six hours, again in six hours, again in twelve hours, again in twelve hours, again in twelve hours, again in twenty-four hours, repeated in twenty-four hours and the last time in twenty-four hours. Milk was now draining from the puncture wound instead of pus. Evidently some of the milk-ducts had broken down and were discharging. Drainage continued for three days and then ceased. In the meantime an induration developed in the upper inner quadrant of the right breast. A binder was applied and three days later under local anesthesia, a needle was inserted and 20 c.c. of pus were drawn out. The pus showed a mixed infection of streptococcus and staphylococcus. The bandage was applied and the aspirations were repeated at sufficient intervals to keep up drainage. The second day after this, an induration which proved to be an abscess, appeared to the right of the nipple of this breast, in close proximity to the bottom of the abscess. It was aspirated through the original cavity. The next day another induration appeared just below the nipple, which was also aspirated through the original opening. The aspirations were repeated frequently enough for efficient drainage. Nine days from the first aspiration there was no more pus and the breast recovered uneventfully. Heat was continued as long as any pus was present. The bandage was reapplied daily for a week. Nursing was not resumed because of insufficient milk. An autogenous vaccine was given.

CASE IV.—Mrs. W., aged twenty-two, primigravida, pregnancy and labor were uneventful. In the seventh week of the puerperium, a large abscess appeared in the left breast, which began in the lower outer quadrant. Both breasts were large and pendulous. The left nipple had a deep fissure which bled freely on nursing. When first seen the breast appeared to be wholly involved. There was much induration and redness of the skin. The fissure was treated with a 5 per cent. solution of silver nitrate and a gauze pad wet with 50 per cent. alcohol solution was put over the nipple and a snug binder was applied to the breast. It was reapplied in four hours and the breast seemed improved. The application of cold was also continuous. The treatment was persisted in for the next two days. By this time the trouble had localized in the lower outer quardrant. The next day the induration was explored and 70 c.c. of pus were drawn out. The pus showed a mixed infection of streptococcus and staphylococcus. The fissure of the nipple was practically healed. The abscess was bound up tightly and heat substituted for the cold. The breast was aspirated at four hour intervals in the first twenty-four hours; after which often enough to insure drainage. After six days no more pus was obtained and the bandaging was continued for seven days, when nursing was again reëstablished. On the fifth day an autogenous vaccine administered.

CASE V.—Mrs. H., aged twenty-eight, primigravida, pregnancy was normal, but had had a difficult labor. On the fourth day after her labor, the breasts became greatly engorged, the temperature went up to 104 degrees. A snug binder and cold were applied, by the next morning the temperature was normal and the breasts had recovered. Four weeks from the day of her labor an abscess, 2 cm. in diameter, appeared in the upper inner quadrant of the left breast. The nipple had been tender. On aspiration, pus, revealing staphylococcus pyogenes aureus, was obtained. A pressure bandage and heat were applied. The aspiration was repeated frequently enough for drainage. No more pus was obtained after the fourth day. The bandage was retained for five days more, when nursing was resumed. The patient was treated with an autogenous vaccine.

CASES VI AND VII.—Mrs. P., aged thirty-two, multigravida iii, two months after a normal puerperium, an abscess developed in the inner lower quadrant of the left breast. This woman was not able to nurse her first child because of the lack of milk, though she nursed her second child for six months. When she was seen, the nipples were swollen, tender and bled while the child nursed. Nursing from the left breast was stopped. The abscess was aspirated, 30 c.c. of pus were obtained on the first aspiration. Staphylococcus pyogenes aureus was recovered. The fissure was treated. The breast was bound by a tight bandage and heat applied. A nipple-shield was used to protect the right nipple and supplemental feeding given the child. In four days the abscess was healed. One day later, there appeared an induration at the lower inner quadrant of the right breast. The breast was bound and two days later the abscess in the localized area was aspirated; 25 c.c. of pus were obtained, giving a pure culture of staphylococcus pyogenes aureus. Drainage was continued by aspirations. No more pus was found after the fourth day. The pressure bandage and heat were used as usual. Nursing was resumed with supplemental feeding. An autogenous vaccine was given as a prophylactic.

Case VIII.—Mrs. S., aged twenty-two, primigravida, pregnancy and labor were normal. The child, strong and healthy, was put to the breast more frequently in the first few days of life, and allowed to remain for a longer time than had been advised. The nipples became tender and sore.

The milk came in on the fourth day. During the third week an abscess, 4 cm. in diameter developed in the lower inner quadrant of the left breast. The nipples had been sore since the second day after the birth of the child. Examination found the nipples swollen, tender and with two small fissures on the left nipple. The abscess was aspirated and about 90 c.c. of pus recovered, which showed staphylococcus pyogenes aureus in pure culture. The nipple was treated and the breast bound with a tight bandage and heat applied. In six hours, the abscess was aspirated again and aspiration repeated frequently enough to keep up efficient drainage. The abscess healed in five days. The bandage was applied for six days more, when nursing was resumed. An autogenous vaccine was given.

There were eight cases of mammary abscesses treated in this series. The pus from two abscesses revealed a mixed infection of streptococcus and staphylococcus, from six abscesses staphylococcus pyogenes aureus alone. In two women both breasts became involved. The abscess was situated in the left breast six times, in the right breast twice, in the upper inner quadrant twice, in the lower inner quadrant four times and in the lower outer quadrant twice. In this series it is seen that the left breast was more frequently affected and the lower inner quadrant was more susceptible. The cosmetic results were ideal. In all it was difficult to recognize the small white scar of the needle puncture. In no case did the treatment extend over a period of nine days, that is, from the first aspiration until no more pus from the cavity was obtained. In three breasts a dry tap was obtained on the fourth day; in three on the fifth day; in one on the sixth day; in one on the ninth day. In the last case there were two succeeding abscesses, which developed in the neighborhood of the original abscess. It was possible to aspirate them through the original abscess cavity. The involvement of the adjacent healthy tissue was easily recognized, as the pressure exerted by the breast bandage prevented the usual diffuse edema of the surrounding tissue.

Summary of the eight cases treated:
Streptococcus and staphylococcus, 2.
Staphylococcus, 6.
Two women both breasts were involved.

Location of abscesses.
Left breast six times.
Right breast two times.
  Upper inner quadrant two times.
  Lower inner quadrant four times.
  Lower outer quadrant two times.

Time of healing.
Three healed in four days.
Three healed in five days.
One healed in six days.
One healed in nine days.

Functional results.
Nursing resumed in four cases.
Nursing partially resumed in two cases.
Nursing not resumed in two cases.

The treatment of all breast abscesses may be considered from the standpoint of preventive treatment and active treatment. The preventive treatment may be discussed chronologically as prenatal care of the breasts; the care of the breasts at the time of the beginning of lactation; and the care during lactation.

Prenatal care particularly covers the period from impregnation to delivery. The treatment is symptomatic. The breasts, however, may be subject to trouble at any time the glands functionate. At birth, when the breasts are swollen with the so-called "witches milk," a snug binder usually controls this difficulty; again at puberty, when the gland is developing, trouble may occur; the treatment is symptomatic. Much has been written about the necessity of preparing the nipples for nursing and many remedies have been recommended for this purpose. My observation has been that the occurrence of sore and fissured nipples is usually associated with a diminution of the milk supply and little can be done for the nipples by prenatal care, unless some real pathological condition exists. To determine the benefit of prenatal care, a series of cases was taken in which one nipple received massage and astringent applications and the other was not treated. In some cases in this series both nipples became sore and in other cases neither nipple became sore. The soreness depended, in previously healthy nipples, entirely upon two factors; the most common, scanty milk supply, due to deficient glandular function; the other, too small openings in the terminal ducts of the nipple. Some of these openings were readily dilated. The conclusions drawn were that little was to be expected from mechanical or medicinal applications to the normal nipple in preventing future trouble to the nipple or breast. It is, therefore, assumed that nature asserts herself here, in the preparation of the nipples for nursing, as she does in the physiological development of the fetus. The nipples should always be kept clean and free from decomposing milk. Warm water and soap accomplish the purpose.

The treatment of the breasts at the beginning of lactation demands more than passing mention. In the first place, a strong healthy child should not be allowed to bruise the nipples by prolonged and frequent nursing, before the milk has come in, as was done in one of the cases in the series reported. It is, however, an advantage to put the child to the breast during the first few days, as it stimulates the contraction of the uterus, it stimulates the action of the mammary gland and it gives an opportunity for the child to become accustomed to nursing. A good rule to follow is to put the child to the breast for five minutes every four hours, until the milk comes freely, when the frequency and duration of the nursing can be arranged as necessary. The most common ill affecting the breasts, at this time, is excessive engorgement. The mammary glands have taken on a high and sudden degree of activity. There are at least five factors which singly or combined may give rise to trouble: the increased blood supply, the increased lymph supply, the production of the milk, the failure of the supporting structure or connective tissue of the mammary gland, and lastly, the action of gravity. The treatment consists of a sungly applied binder, supplemented by nursing, or if necessary, the application of an efficient breast-pump.

As long as the child is nursing the breasts are liable to infection and abscess formation. From my series it is seen that sore, cracked and bleeding nipples are almost always associated with a diminishing milk supply. As the milk supply is lessening the hungry child sucks excessively and bruises the nipple in his effort to obtain sufficient nourishment. Some nipples can not withstand this excessive maceration and they become sore, swollen and cracked. When this state is discovered, three things must be done; first, the irritation to the nipple must be relieved by the use of an efficient nipple-shield; second, the nurse must be supplemented by some milk formula; third, all fissures or cracks of the nipple should be treated. Silver nitrate solution may be used for this purpose. If the infection has traveled up the lymphatics or milk-ducts and redness, lumping and tenderness of a portion of the breast occurs, the breast must immediately be put at rest by a suspensory bandage and cold continually applied by means of an ice-bag. Nursing must cease or else the gland cannot be put at rest. The nipple is treated if a fissure exists, as it commonly does. When this plan is adopted early, that is, at the first sign of trouble most infections will subside and in the course of a week, the nursing may be resumed, the nipple being protected by a nipple-shield for a day or two. If the infection has had time to spread beyond the lymphatics into the surrounding tissue, a tight bandage is applied to produce pressure and not merely applied for support. The nipple is treated as previously described and the infection of the breast is allowed to localize. Cold is carefully but generously applied. With this pressure equally distributed on all parts of the breast, the infection usually is limited and the protecting leukocytic wall is readily thrown about the infected tissue. At this time, suppuration is taking place and dry heat is substituted for cold and should be as thoroughly applied. Any increase in pain shows that the process is spreading and that the bandage should be tightened. The rule deduced is: In breast infection first apply equally distributed pressure; when the abscess localizes, aspirate. One may meet the rare condition, in which the infection is due to a virulent strain of hemolytic streptococci, producing a phlebitis with thrombus formation, with little lymphangitis surrounding, giving off septic emboli to be distributed throughout the body. In this case there is little to be done unless one can immediately locate the vein, and tie it off and extirpate it.

In every case I made an autogenous vaccine and administered a dose of five hundred million on the fourth or fifth day after the first tap, using it as a preventative against recurrent abscesses.

In the treatment of breast abscesses I use the following technic: The instruments necessary consist of two glass syringes, one an ordinary hypodermic syringe with a needle of 24 gauge and the other a 10 c.c. or larger syringe with a needle of 17 gauge and at least two inches in length. The anesthetic solution of alcohol 50 per cent. and tincture of iodine 7 per cent. complete the equipment. The technic of the operation is as follows: the skin is washed with alcohol and then painted with the iodine solution. A 0.5 per cent. solution of novocain, to which is added three drops of suprarenal extract to the ounce of solution, or one of the recent substitutes for novocain, is used as the anesthetic. This is injected at the site of election, down to and into the abscess cavity. It is important to use a very sharp 24-gauge needle, as this causes the minimum amount of pain on its intion through the skin. The left hand steadies the breast and with the syringe in the right hand, the initial puncture is made with a quick stab into the skin. Once in the skin the solution is to be distributed equally along the determined track, which the aspirating needle is to take to drain the abscess cavity. A few minutes is allowed to elapse for the anesthetic to take effect. The aspirating needle with its syringe attached is then inserted into the abscess cavity. The syringe when full can be detached, emptied, and then reattached. This is repeated until the cavity is thoroughly evacuated when the needle is withdrawn.

I append a résumé of the recent literature on the prevention and treatment of mammary abscesses.

PROPHYLACTIC CARE OF THE BREASTS.

In speaking of the care of the breast before and during the period of lactation Reder says, that to properly prepare a nipple the expectant mother is instructed to use soap and water freely. After drying the breast gentle friction with a rough towel or flesh brush is made for about five minutes. Following this rubbing, the nipple is massaged by rolling and kneading it between the fingers, gentle traction being made during these manipulations. The free use of olive oil during the massage, which is to be given twice daily, is advised. It is surprising how a hopeless appearing nipple will in a comparatively short time assume the characteristics of a normal one. Intelligent massage in addition to the baby's being put to the breast at regular hours, instituted before the appearance of the milk, will add greatly to the comfort of the mother after lactation has been established. With it, excessive congestion and engorgement, the so-called "caked breast" and other troublesome conditions that often inflict unnecessary pain upon the mother, will become less frequent. To keep a breast, during the period of lactation, in a healthy state it is necessary that its evacuation should be thorough and at regular intervals. If the secretion, however, is excessive, other active measures should be applied. To assist the organ to remain within its normal confines, a breast binder properly applied, with the glands well pressed forward upon the chest toward the median line and away from the axillary spaces will encourage the natural process with the greatest possible comfort to the mother.

Döderlein recommends, "Gaudanin," which is a carefully prepared solution of the best para-gum, containing a 1 per cent. solution of formalin, which makes it not only sterile but bactericidal. He has used it in 200 cases with good results as a preventive against cracks and fissures, applying it to the nipple.

Strassmann concludes his article with the admonition, "Away with alcohol hardening of the nipple." "Washing with water," he continues, "in the puerperium before and after nursing causes maceration of the nipple. He uses balsam of Peru 2 to 5 per cent. He also advises against rubbing the nipple during the nursing period.

Lymphangitis mammæ according to Vincent, is due to an infection of the lymphatics at the nipple. The infection may be due to the lochial discharge, which in its normal condition at the second week can produce the infection. He adds that the conjunctivitis occurring in infants about the second week, when the eyes have been previously free, is due to the same cause.

Keyes writing under the heading of, "Mastitis lactania," has noted the concomitance of abscess of the mother's breast and thrush stomatitis of the nursing infant. Further, from clinical observation there are also cases of apparently synchronous ductitis and lymphangitis.

Freund mentions mouth infection as a cause of mastitis.

Witcher reports a case of mastitis occurring in pregnancy. A year previous, the breast was injured by a fall and under treatment it recovered. Mastitis appeared again during pregnancy, many cuttings followed, till finally the day after the birth of the child, the breast was opened and thoroughly drained. He states that when mastitis occurs during pregnancy, trauma is the likely cause.

BACTERIOLOGICAL ASPECTS OF MASTITIS.

Benians covers the bacteriology of mastitis very thoroughly. He states that the staphylococcus aureus is the most common organism. The infection usually enters by the ducts, causing clotting of the milk and obstruction follows. The bacteria multiply in the acini and the condition begins as a lobular mastitis. Subsequently the surrounding tissue may be involved and suppurate. The streptococcal form of infection occurs through a lesion of the nipple. It spreads by the lymphatics and involves the interglandular cellular tissues without at first causing obstruction of the milk duct. In twenty-five consecutive cases, he found cracked nipples twice and records that Keher found cracked nipples in 25 per cent.; H. Ehrlich in eighty-four cases, 24 per cent. of cracked nipples. Schalk, in twenty-two cases of cracked nipples, found in fourteen cases, streptococcus and staphylococcus aureus; in eight cases, staphylococcus alone. In three cases which suppurated two were mixed and one a pure staphylococcus infection. As to the immediate source of the infecting organism, still quoting Benians, Koestlin found staphylococcus albus on the nipple and areola in 297 consecutive cases; Cohn and Neumann have shown that staphylococcus aureus is the most frequent organism found in the milk from the normal breasts, but the bacteria are few in number. In the intervals between suckling, the bacteria multiply. In the milk from obstructed breasts they found these organisms present in great abundance. These observers also found that most bacteria were in the sample of milk first drawn, that is in the milk lying nearest the nipple. Schalk has recently shown that organisms similar to those found in the nipple cracks and associated abscesses are also to be found in the child's mouth and in the maternal vagina at birth. He traces infection through these channels. Benians continues, that when suckling is to cease an injection of staphylococcus aureus, the usual organism of duct infection, should be administered, causing an increase of resistance and an increase in the amount of opsonin in the milk. The breast should be aseptically exhausted once or twice. Vaccine treatment is not very successful in early cases of inflammation of the breast. After drainage is established, vaccines should be used also in chronic suppurating sinuses of the breast.

Pithie describes a case of sepsis following mastitis, which he treated by antistreptococcus serum with recovery.

COMPRESSION.

Trousseau, Barnes, Braxton-Hicks and our own older American obstetricians recognized the value of pressure in inflammation of the lactating breast.

Lewis affirms that caked breasts means infection. Compression plus saline cathartics relieves the induration in most cases. Indeed it never fails unless suppuration has already occurred and in that event it is still the proper treatment, for it will limit the extension of the infection. He advises against the use of massage.

R. Becerro treated fourteen cases of mastitis by the applications of cold; one case having an abscess, three were cured in three to five days, the remainder healed immediately. He uses the following technic: When the cold is withdrawn, the breast is immobilized and well covered with sterile cotton, after protecting the nipple with gauze which is also sterilized. A bandage of cambric, 10 cm. broad and 10 meters long, is used to bind the breast. He renews the bandage every two days and continues to apply the bandage for six or eight days, when the mastitis is completely cured and the bandaging stopped.

Bacon claims that 90 per cent. of cases can be aborted with rest and cold applications.

In a recent article on the prevention of mastitis, Norris concludes that surgical cleanliness should be practised daily with as much care as for preparation for an operation of the breast. Rest should be planned for the nipple and breast as for other organs that must functionate although temporarily crippled. Dry and moist heat and pressure should be properly utilized for their well-known hydro- and mechanico-therapeutic values. The means of utilizing these principles are the use of the lead nipple-shield, hot-water bag or hot compressions and the mammary binder.

BIER TREATMENT.

Markoe, in the *Southern California Practitioner* (1915, page 145) relates that the treatment of acute inflammatory conditions by the induction of an artificial hyperemia, the "Stauungshyperemia" so extensively developed by Prof. Bier, has also found a successful application in puerperal mastitis. This is an advance over the customary method of extensive incision and drainage and slow recovery. The advantage of the Bier method is shortened duration of the inflammatory process and smaller incision.

Zangemeister affirms that the suction treatment of Bier is not for cases of fresh puerperal mastitis, but when the abscess has formed it may be used in conjunction with a small stab incision into the abscess.

Jäger had only two recurrences in a series of thirty cases of mastitis treated by the Bier treatment.

Hartmann treated twelve mastitides successfully with the suction method of Bier.

Weibringhaus, by the Bier method reduced his average time in the cure, from thirty-eight to twenty-eight and one-fourth days. He uses a bell 12 to 15 cm. in diameter. He has had no relapses.

Among 4200 parturients, there were eighty-five cases of mastitis. Of twenty-five cases under the antiphlogistic treatment four, or 16 per cent. went to suppuration. Of the sixty cases by the Bier treatment in only five, or 8.33 per cent., was an abscess formed.

Klapp quotes Fehling, who in the Stuttgarter Hebammen Anstalt observed in 3738 nursing women 119 cases of mastitis or 3.18 per cent., of which twenty-three or 6 per cent., or 19.3 per cent. of those having mastitis, suppurated. Mastitides occur mostly at the end of the first month. Klapp recommends that the breasts should be pumped out so as to keep up their function. Both the antiphlogistic and the Bier treatment has its sponsers and it remains to be seen which treatment is superior to the other.

Hirsch makes the following citation as the usual treatment of puerperal mastitis. If there is no pus; rest, the application of pressure bandage and cold. If there is pus; a broad incision and contra-incision is made and drainage established. Hirsh reports seventeen cases, which he divides into four groups.

Group I. Three cases treated by incision, contra-incision, drainage and packing. The average healing was forty-seven days.

Group II. Four cases with the suction treatment there were three recurrences. The average healing was forty-five days.

Group III. Five cases treated by combined suction and incision. The average healing was fifty-three days.

Group IV. Five cases were treated by incision and packing the cavity with boric acid and applying a binder. The average healing was nineteen and three-fifth days.

INCISION.

Nicholson, in a recent paper, read before the Philadelphia Obstetrical Society, declares that the treatment of an abscessed breast is simplicity itself, if it be opened early. He mentions that in Hirst's service, Dakin's solution is being used with some success.

Morestin uses ethylchloride anesthesia and incises the breast abscess, then applies a wet dressing with mild and regular pressure. Two cases thus treated were healed by the fifteenth day.

Fienen employes a modification of the Bardenheuer technic. He discusses the treatment under three heads. 1. Rest and bandaging. 2. Puncture and Bier's method. Even large abscesses heal in from four to ten or twelve days. 3. Bardenheuer's technic, which is to incise the lower border and fold up the breast and the abscess is incised posteriorly and drained. He quoted Karczewski as favoring this method in long and severe mastitides. Feinen records ten cases; in four, the inferior and outer portion of the breast was affected; in two the inner portion; in four the superior and outer portion. The danger of sepsis is less and was never seen by Feinen. The likelihood of missing a small deep abscess is less by the Bardenheuer method than by any other. This is the only method which preserves the function and removes only the disease and moreover leaves only the smallest nucleus for future carcinoma development. He refers to the work of Ebbinghaus who found that mammary carcinoma was preceded by mastitis, that Gebele found carcinoma in 20.5 per cent., Oldenkopf in 34.9 per cent., Pulson in 28 per cent., Winiwarter in 21.5 per cent., Sprengel in 30 per cent., Horner in 21.43 per cent. Feinen modifies Bardenheuer's operation by adding the secondary suture.

Durand advises if incision has not cured the breast, it should be removed.

FILIFORM DRAINAGE.

Chaput recommends the employment of the filiform drainage. He accomplishes this by drawing, through the dependent portion of the abscess, a needle threaded with a silver wire. In large abscesses he incises and puts in through and through drainage. In multiple abscesses by means of a bougie he connects all of the abscesses with the inferior abscess and then drains the inferior abscess.

In *Il Policlinico* (1917, page 905) San't Agnese tells of a woman who on the third week of her puerperium, had recourse to the unsanitary habit of wetting her sore nipple with saliva, and was admitted to the clinic suffering with a superficial abscess in the areola and a deep one in the inferior quadrant. On the 28th of January a silver wire was passed through the superficial abscess and abundant pus was obtained. On the 29th, a second wire was passed through the deep abscess and almost immediately there was relief and gradual disappearance of the symptoms. The bandages were changed twice a day because they were saturated with pus. There was a recurrence of the abscess because of too early removal of the thread. On the 23d of February, the woman returned to the clinic with an abscess of the inner quadrant of the right breast. An exploratory puncture revealed pus and a bronze aluminium wire was passed through the abscess. By the 26th, the pain and inflammation had nearly disappeared. The pus stopped flowing on the ninth day. The thread was retained for a few days because of the experience in the left breast. Then the wire was removed as the induration subsided. Both breasts were cured with the least possible disturbance to their function and only the small punctate scars were found; a big advantage over the incision method. San't Agnese would substitute a horsehair for the rigid metallic drain and concludes that if the drainage is not sufficient, recourse can always be had to incision. In a second case an enormous abscess, in a patient of Prof. Pestalozza, was treated, by inserting two silver wires the size of the lumen of a needle for lumbar puncture, then he later used horsehair.

INJECTION OF AIR.

Bonnet states that the veterinarians use the injections of air with very good effect in cases of fever during lactation. It has been used in the human also, as in painful neuralgias, etc. It is necessary to distinguish in using this method, the different forms of mastitis. In simple engorgement, galactophoritis and mastitis proper the air injection is the operation of choice. Twice he obtained a rapid cure where the abscess opened spontaneously. The technic is described as follows: A bellows is attached to a rubber tube 50 cm. long in the middle of which is a glass tube 4 or 5 cm. long, the lumen of the tube is obturated by a tampon of hydrophilic cotton, as a filler. A platinum needle 5 cm. long is inserted in the end of the tube. This is all the apparatus necessary. The injection is made in the retromammary space below the zone of inflammation, at two, three or four different points, making a true air cushion about the inflammatory mass. The quantity of air injected is 200 or 500 c.c. in the two or three days. The subsidence of the painful phenomena ceases in a few hours after the first treatment. The cure follows often in two or three days almost always in the tenth or twelfth day.

ASPIRATION AND THE INJECTION OF SILVER SOLUTION.

Chirie and David report four cases:

CASE I.—Mrs. C., delivered four months ago, entered the maternity, because of an abscess in the inner lower quadrant of the left breast, on Oct. 12th. A hot compress was applied. On Oct. 13th, the abscess was punctured and 5 to 6 c.c. of pus containing streptococcus, were obtained. The cavity was washed with colloidal silver solution and 4 to 5 c.c. allowed to remain, a wet hot compress was applied. The treatment was repeated in the evening. After twenty-four hours the pus was thinner and contained a few chain cocci. Same treatment given and amelioration is manifest. Oct. 14th, same treatment, no redness. Oct. 15th, same treatment. Oct. 16th, same treatment. There is no more pus; only a clear yellowish fluid by the nipple is expressed. Oct. 17th, expression A. M. and P. M. the same. Oct. 18th, all is finished, a hard induration in place of the abscess.

CASE II.—Mrs. M., aged twenty-eight, primipara, was delivered at the maternity Oct. 13th. On Oct. 30th, a galactophorite of the right breast occurred, which developed into a large abscess, and this was treated by incisions. On Nov. 21st, the patient suffered much with her left breast. A marked swelling was present at the superior external quadrant of the breast; at this level the skin was red, tender, and there was evident fluctuation. The abscess was punctured with a fine trocar and a large quantity of thick greenish pus aspirated. The cavity was washed with a solution of silver and 10 c.c. of the fluid left in the cavity. The pus showed the presence of pneumococci. That same night the patient was comfortable. The aspiration showed very little pus. Lavage of the cavity in which we leave a little quantity of silver solution. Nov. 23d, patient does not suffer at all, swelling disappeared, redness of the breast is diminished, temperature is normal. The cavity fills up little by little and we could inject no more fluid. Nov. 28th, seven days after the first puncture, the cure was complete. There remains no trace of an abscess except a slight superficial erosion produced by the trocar. The right breast, treated by the ordinary method, still continues to suppurate.

CASE III.—Madame F., aged twenty-one, delivered Aug. 26th, re-entered the hospital on Sept. 20th because of an abscess of the right breast, which was opened on Sept. 21st. The customary treatment was given with amelioration. About ten days later a new abscess occurred and was incised, the wound drained, with gauze wet with the silver solution. Drainage diminished, but it still persisted. On Oct. 20th, they found on the surface of the left breast a small abscess as large as a walnut. This was punctured without incision. The pus was aspirated with a syringe and 3 c.c. of colloidal silver solution injected. The treatment was continued twice daily and effected a cure complete in seven days. On Nov. 20th the patient commenced to suffer with her left breast, which increased a little in volume; the pain and the swelling increased during eight days. They saw the patient Nov. 24th, she complained of very violent pain. The breast was enormous, the skin was smooth, tender and livid red. There was fluctuation of the superior external quadrant of the breast. At 10 A. M. by aspiration 200 c.c. of pus was obtained. Streptococcus was the predominating organism. They performed an extensive lavage and left in 40 c.c. of silver solution. The patient did not suffer since the puncture. The breast had diminished very much in volume, another puncture removed a few grams of sero-sanguinous liquid. The temperature was normal. On Dec. 3d, by an accident, an attendant filled the cavity full of air while aspirating. By Dec. 6th the first abscess was healing nicely and the cavity was much contracted. Two secondary abscesses formed because of the interstitial emphysema caused by the introduction of air with the syringe. The breast was entirely healed in twenty-six days.

CASE IV.—Mrs. M., abscess occurred in the right breast. Dec. 15th the abscess was punctured and 10 to 15 c.c. of pus recovered.

Pus contained staphylococcus. The silver solution was likewise used with good results.

CASE V.—Patient seven and one-half month's pregnant, had six abscesses of the right breast. One had already opened. All the abscesses were connected with the one and the whole irrigated with the silver solution. No improvement was noted and radial incisions were resorted to. The patient recovered with eight large radial scars. This leads them to comment that it was a mistake to connect the abscesses and further, the silver solution was not able to be retained in the cavity, because of the original opening. Of all the abscesses a cure was had in from seven to twenty days. Chirie and David developed a self retaining needle for the irrigations.

Comment.—Chirie and David's method of treating breast abscesses is, in all the literature on the subject, the nearest approach to the method, which I recommend. The criticism of their method, however, which I would make is: Silver solution is injected into the cavity and allowed to remain there and no importance is attached to continuous, equally distributed pressure. No fluid should be left in a pus cavity, as it is desirable to approximate its walls, thus limiting its size, and thereby assisting the process of granulation. This is best accomplished as I have said before, by keeping the cavity empty by sufficiently frequent aspirations and by applying equally distributed pressure, during the healing of the abscess.

Theuveny records six cases of mastitis treated by the method of Chirie and David and they all healed rapidly. He found that the trocar can only be left in place for twenty-four or thirty-six hours, as the skin hole enlarges about it.

Junior also used the French technique. On the fifth day he suspends the use of the silver solution and injects 1 c.c. of the tincture of iodine. After the fifteenth day he suspends all medication and by the twenty-ninth day the cure is complete without any deformity.

In conclusion the points to be emphasized are:

1. Care of the lactating breasts and nipples means: (*a*) Cleanliness; (*b*) Avoidance of prolonged and frequent nursings during the first days before the milk comes in; (*c*) Early recognition of a failing milk supply and the immediate institution of supplemental feedings; (*d*) On the first sign of any trouble, nursing is to cease temporarily and the lymphangitis is combated by pressure and cold to the breast.

2. Drainage is accomplished by frequently repeated aspirations. Upon this one point plus the constant pressure depends the success of this method of treating breast abscesses.

3. The second aspiration is performed four to six hours after the first aspiration. The amount of fluid, obtained at this aspiration, will determine the frequency of the following aspirations.

4. Each succeeding needle puncture is made through the original puncture and is always preceded by local anesthesia.

5. The time of healing in the cases reported was from four to nine days.

6. Abscesses contiguous to the original abscess are not difficult to locate, because the pressure exerted by the bandage prevents any excessive edema, so that any induration between the skin of the breast and the chest wall, is readily recognized by palpation. It is usually easy to drain, by aspiration these contiguous abscesses through the original abscess cavity.

7. During the acute stages before the abscess has localized, it is essential that the pressure bandage should not be removed from the breast, except for the briefest time possible and the pressure bandage should be continued several days after there has been a dry tap.

8. Cold should be continuously applied unless pus is present, when heat is substituted.

9. From a psychological view-point, the aspiration method should be the method of choice, as there is practically no scarring to recall the patient's suffering.

10. Prenatal care of the nipples does not prevent the occurrence of sore nipples or breast abscesses.

11. Every nursing woman should be impressed with the fact that by caring for the breasts and nipples, at the very first sign of trouble, she may escape many days of acute suffering and also years later she may perhaps avoid the development of a mammary cracinoma.

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WHY PRENATAL CARE?*

BY

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PRENATAL care may be defined as preventative medicine applied to obstetrics, hence broadly considered and correctly administered, it embraces and utilizes all possible measures in the way of protecting and keeping the prospective mother and unborn child well, whether represented by charity, industrial, well-to-do, or rich. It includes the benefits derived from early, thorough and constant observation of both patients, enabling the earlier and better correction of dangers antedating conception, ascertaining the condition of health or disease at the beginning of gestation, and fortifying the maternal organism for the special function imposed upon it by the growing fetus. Its function comprises the interrogation of the woman's entire past and present physical and nervous make up, endeavoring to keep her free from attacks of intercurrent disease, correctly instructing her in the essentials necessary to comfort, health, and safety as mother and unborn are piloted along the dangerous journey between health and disease to the close of maternity. The attitude taken on the part of those deeply interested in all that enters into the safety of both mother, unborn, or newly-born child, must reach its fullest benefits when rational, prenatal, and obstetrical care have been invoked from the earliest weeks of conception until the close of the puerperium.

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Why these days of anxiety, months of care and watching, is the question often asked by the careless public and probably not a few disinterested members of the profession. In answering we are justified in stating, that while maternity is universally supposed to imply the exercising and executing of a physiological function, the diseased, ill prepared, the vicious, the morbid conditions embodied in the make-up of modern life, as met in the presence of dynamic midwifery, have combined to make it far too frequently a pathological certainty. Reasoning from analogy, in the absence of a healthy father and mother we cannot expect the birth of a normal, healthy, and perfectly developed child.

Obstetrics of to-day, as taught and practised in the fullest interest of all concerned, constitutes more than the services of the medical attendant begun at the onset of labor and ending with delivery of the placenta. It considers the care of the mother and child from the onset of gestation to the close of the puerperium, including all help for the betterment and safety of both, implies obedience to the laws of health, the general submission to the rules of personal hygiene, normal living, individual protection, prenatal supervision, and safe obstetrics such as "every child-bearing woman should possess" in the fullest degree in interest of self and child. Practical application has long since proven in dealing with the sick, abnormal, exposed, and dangerous, that it is safer, easier, cheaper, and better to prevent than cure disease, and to this the art and science of obstetrics furnishes no exception. All aids in the way of safety furnished mother and child before birth necessarily protects and makes for improvement of both, during and after birth.

It is very important to remember that motherhood in the entirety exacts the most severe test of woman's physical, mental, and nervous make-up. It is also imperative to know that pregnancy fails to furnish immunity from any disease, augments all preëxisting maladies, renders woman more susceptible to many general disorders, complicates and endangers intercurrent diseases and intensifies all local affections.

Reasoning by comparison that from the birth of humanity all through the centuries there have been associated with the act of reproduction many dangers increased by the absence of antenatal care and safe midwifery; likewise multiplied by disease, mode of life, perverted habits, and mechanical obstructions, these facts are none the less important when we realize that for ages the meager and gross danger signals of maternity have flashed their red warning along the pathway of the prospective and parturient mother, the same through ignorance and failure of correct interpretation as to diagnostic and prognostic values, remained largely unobserved by the medical attendant.

It may be asked with all seriousness why the apparent increasing dangers, the multiplied red lights, flashing out their signals of warning along the pathway of the pregnant woman of the present are increased over those of the past? Have the natural laws "governing reproduction" been perverted? Or the mechanism of labor and the puerperium changed? Are the women of to-day less capable of assuming the mental, physical, and nervous strain necessary to the "requisites of perfect motherhood" than were their grandmothers? Has this often quoted "primitive physiological process," under the trend and vicious influence of modern civilization to a varied degree suffered defeat, thereby substituting a pathological condition?

It must be apparent to the close observer of the present day in delivering the legitimate offspring of the twentieth century, that the penalty exacted in consequence of violation of health laws, demands of society, strain, perverted habits of modern civilization and artificial life coupled with a diseased body at the onset of gestation or acquired during its presence, frequently prove an "unbearable burden," resulting in broken maternal compensation, often followed by physical and nervous wreckage giving to humanity a weak, undeveloped, poorly-nourished child of uncertain potential value.

In view of the above unfavorable obstetrical findings, the prospective mother in placing herself under protection of her attendant should receive from his hands as thorough a physical examination as if for life insurance. The importance of correctly determining the women's individual make-up, is self-evident, including close inspection of nose, tonsils, and teeth for focal infection, estimating nervous circulatory and urinary index, noting carefully the blood pressure, the pelvic measurements, determining the existence of diseases pertaining to the thoracic, abdominal, and reproductive organs. In other words, we must know whether pregnancy is begun in the presence of a healthy body; for if thus armed with positive or negative findings as to health or existing disease relative to general or special bodily functions, the attendant is better prepared for executing antenatal and internatal supervision, for the conduct of labor, and care of mother and child during the puerperium.

The well-known version of the village maiden expressed under the phrase "she feeds two" as referring to Margurite in "Faust," is virtually true as applied to the pregnant woman, for she is required to breathe, digest, assimilate, excrete and secrete for herself and a growing fetus and as soon as these functions are interfered with, life and health of mother and unborn child become endangered; the neglect or ill health of either jeopardizes the life of the other.

The profession has as a body so far failed to seriously consider the degree of danger and obstetrical disqualifications imposed on the present and potential mother in consequence of preëxisting and intercurrent diseases, perverted nervous organization, and "dwarfed physical make-up." It prefers to consider all pregnant women normal unless some flagrant danger signal announces in the superlative degree that she is otherwise. The safer and more rational procedure in securing protection for mother and unborn child would be to consider every pregnant woman obstetrically abnormal until she is proven normal by the most searching physical examination. Tradition is especially responsible for cloaking obstetric art as a "mysterious something." This erroneous traditional inheritance handed down as a vicious, maternal legacy is responsible for much neglect, suffering, invalidism and sometimes death. We are within the bounds of truth in stating that as a result of the above belief, neglect and ignorance, the world has been belted with tombstones marking the last resting place of women who paid the supreme sacrifice at the altar of motherhood.

The ability to more fully comprehend past conditions, measure the extent of neglect, estimate the suffering, dangers, mortality, crippled mothers and children left as pensioners on society and burdens to family, may be in a faint degree realized when we are confronted with the statement that prior to the birth of the present century 60 per cent. of all labors in the United States were attended by ignorant and dirty midwives or physicians who had but little regard for surgical cleanliness, the protection of patients, or their present or future health.

Statistics inform us that during recent years the mortality in typhoid fever has been reduced from 46 to 17 per cent. to every 100,000 population; that the diphtheria death-rate has dropped from 97 to 18 per cent.; tuberculosis from 250 to 147 per cent.; pneumonia from 186 to 132 per cent. Such life saving comes not by chance but as the result of the combined efforts furnished and exercised by all agencies calculated to prevent or cure. While obstetrics has assumed the dignity of a specialty and is recognized as a unit of general surgery, the generalist is doing safer and better work to-day than ever before and will continue as in the past to attend the major part of all labors. Yet with the present betterment no marked reduction in morbidity and mortality has favored the child-bearing woman and her offspring from accidents, diseases, and special pathological dangers associated with the act of motherhood. The tragedies met with in obstetrical work call for the exercise of every possible safeguard to eliminate or diminish the dangers incident to the accomplishment of maternity. The practical, safe standard cannot be secured until the masses are educated to the dangers of pregnancy, proper prenatal and internatal supervision secured, and intensified obstetrical services rendered. Toward this end we note that the establishment of antenatal organizations are more generally pooling their support and coördinating their various activities in, the interest of the child-bearing woman and her offspring. That every available factor for the safety be speedily and faithfully enlisted would seem imperative when we are confronted with the humiliating statement that among governmental records compiled from among sixteen enlightened nations, the United States stands fourteenth in mortality due to childbirth and its complications. As computed for 100,000 population the maximum goes to Spain with a mortality of 19.6; the second highest to America, 14.9; while Sweden drops to the lowest, 6. In the United States at present we are led to believe the practice of midwifery is relatively in the hands of the regular profession; such is not true so generally in the countries of Europe which are included in the above nations; hence we must to a large degree assume the blame of poor obstetrics.

The ignorance on the part of womanhood regarding dangers and necessity for adequate preparation for maternity, the apathy of the general public to the health and life of child-bearing woman and her offspring and the degree of neglect and failure on the part of the profession to measure the hazard accompanying maternity, have combined to render necessary a more complete understanding of prenatal benefits; until the very recent past conspicuous by their absence. In our safety and antenatal measures in behalf of motherhood we are not alone administering to a local, special geographical, or single danger zone—pregnancy and its end-results are cosmopolitan in extent. The child-bearing woman is present in the hovel, where filth, disease, ignorance, and crime hold perpetual carnival; in country, hamlet, village, town or city cottage; universally found in the home of the well-to-do where happiness and comfort dwell; met generally by accident in the palace of the rich, surrounded by wealth, luxury, and ease.

The difficulty in securing the helpful benefits of antenatal care in the absence of coöperative efforts in behalf of the local profession and the unwillingness to accept and in a saving degree obey the hygienic rules governing pregnancy by the laity, is painfully realized by the busy city or country practitioner with maternity work scattered from center to periphery of his territory often summoned to the lying-in room without previous knowledge of patient or the existing pregnancy.

Much can be accomplished in the way of assisting the profession and educating the public by free distribution of booklets on prenatal care, infant mortality and kindred subjects, issued under the supervision of the United States Labor & Children's Bureau; aided by the coöperation of local boards of health in securing standardized literature bearing upon maternity, the same to be furnished prospective mothers through distribution to physicians by secretaries of county societies; well censored notes carried under "health columns" in local papers; the necessity of early registration of every pregnant woman with the physician of her choice, thus without personal publicity she is enabled to secure antepartum supervision.

The prospective mother should be informed of the absolute necessity of insuring safety to self and her unborn by frequently presenting herself for the purpose of personal health inventory, receiving instructions as to diet in keeping with the individual case, the kind and degree of exercise, and the character of her clothing. The importance of fifteen day (or oftener if found necessary) reading of blood pressure, checking of renal output as to amount, chemical, microscopical findings, normal and abnormal constituents. These frequent antepartum observations should furnish occasion for noting patient's physical index, included under early or late gestational pathology as manifested by the presence of undue vomiting, bilateral headache, increased arterial tension, ocular manifestations, gastric disturbances, perverted nervous phenomena, edema, general diminished excretions and secretions; such gestational pathology if present in the mildest degree stands chargeable with an assault on maternal and fetal life presenting a clinical picture, and antenatal symptomatology shot through and through with danger signals of sufficient magnitude to enable the most casual observer to read.

Is there no necessity for maternal preparedness or demands for safe obstetrics when we are confronted with the conservative estimate that approximately 85 per cent. of the child-bearing women in America are accorded no saving degree of antepartum care, while great numbers are attended by ignorant and dirty midwives or members of the profession poorly qualified to render safe service in consequence of inadequate facilities, lack of personal obstetrical experience or definite surgical technic.

Practical experience of those engaged in obstetrics as a specialty demonstrates that approximately 30 per cent. of all pregnancies are in some degree abnormal, this danger is manifest by the slightest degree of ill health or represented by the most vicious gestation or internal pathology. In the presence of these dangers the safest way is to furnish rational, prenatal care to every case of pregnancy. This would seem highly necesary when 4 per cent. of all gestations present symptoms of definite toxic or preëclamptic danger signals; 2 per cent. of expected mothers show heart lesions; 9 per cent. of all prospective mothers possess some degree of pelvic contraction; 3 to 5 per cent. being affected with syphilis; 6 per cent. present abnormal blood pressure; antepartum hemorrhage present in 1 per cent.; 0.7 per cent. show evidences of tuberculosis. While 7 per cent. of all deaths of women between the ages of eighteen and forty are caused from puerperal infection; this with our present knowledge as to the cause, is very largely preventable.

In the campaign inaugurated in behalf of "baby week" full recognition has not been accorded the fact that in the great battle for betterment the "mother is baby's first and best friend," failing to realize that health, education, protection, antenatal supervision and highest grades of obstetrical service rendered child-bearing woman and unborn offspring cannot be logically and safely separated from infant mortality and its prevention in making for better mothers and healthier babies.

It is hard to understand in the face of the above diseases, dangers and loss of life how the most conservative, physiological "standpatter" can fail to realize that there is necessity for antepartum care. Practical experience demonstrates there is something radically out of the normal in not a few of the present-day type of women when subjected to the sacrificial strain rendered necessary by maternity.

The question may be asked whether the prospective mothers are willing to receive supervision along the lines implied under prenatal care when approached on the grounds of personal safety. The uniform answer as coming from those who have individually advocated or personally employed the measures whether on the part of the visiting nurse, special social worker, health boards, prenatal clinics, medical attendant, or obstetrical specialist, is very largely in the affirmative. The willingness to generally accept and obey the measures of safety offered makes it incumbent on the part of the profession in the fullest degree that these safeguards be furnished, not in the spirit of an alarmist, or from the standpoint of the medical demagogue, but as a personal duty exacted of the profession toward all candidates for motherhood.

There is probably no division of medicine or surgery in which men who have had little or no special training feel so competent to act as in obstetrics. It may be safely stated there is no department of the healing art in which an incompetent attendant is capable of doing so much harm.

Generally speaking the profession has failed to recognize that the highest service rendered by the obstetrician is to ever keep in mind and put in practice the first great principal, "the primary purpose of conception and reproduction." In this, prenatal supervision, intensive obstetrical service fulfills its broadest mission, reaches its fullest success in the successful delivery of a living, healthy child from the unmutilated and otherwise sound mother. It must take into consideration not how soon but how well an individual labor is terminated.

Professionally we most respectfully bow to the general practitioner in city or country, who in consequence of lack of antepartum supervision and in the absence of competent assistance, is often compelled in the presence of grave emergencies to assume the responsibilities of attendant, consultant, operator, and nurse. As met with in city, town, or country we have found in the presence of most vicious forms of gestational pathology or various degrees of dystocia in dynamic obstetrics, his diagnosis very largely correct. The end-results of his work in estimating factors at fault and the best lines of procedure in the interest of both patients bespeak for him sound judgment and obstetrical skill.

In our endeavors to standardize procedures in the way of furnishing the best and safest protection for maternity, there should be the closest coöperation between the services of the obstetrician and the generalist, to secure uniform methods bearing on application of prophylactic benefits, therapeutic measures, prenatal care, and surgical technic. It is a common experience among obstetrical practitioners that there is an increasing gestational pathology and a more frequent call for art in supplementing inefficient forces of nature in her efforts to accomplish normal delivery. It goes without saying that such artificial assistance in order to serve best the safety of all must carry with it due consideration of the individual factors involved, the personal equation to be solved, and the safest measures to be adopted in the interest of health and life in terminating delivery. These therapeutic and surgical measures would seem to be imperative in diminishing loss of health and life when computing maternity in its entirety. The necessity of conservation of mother and child life is apparent when we are confronted by statistics from trustworthy sources. The annual number of uterogestations in the United States approximate 2,650,000. From this number no satisfactory method has been instituted whereby the enormous loss of fetal life may be computd in consequence of expulsion of the products of conception before viability. Out of the above number 15,000 maternal lives are annually lost and additional thousands left with impaired health due to accompanying accidents and complications. One hundred and fifty thousand mothers give birth to full-term dead babies; during the first four weeks of infant life another 115,000 die, showing the annual number of lives lost to be 280,000 in the execution of what is regarded the normal and supreme function in the life of the child-bearing woman. These results are only second to that of tuberculosis. Facing the above facts is it necessary to ask, are we dealing with a function peculiar to motherhood theoretically and practically free from danger? It would appear so from the frequent indifference evinced by those who should be most vitally interested. A conservative estimate as to the possibility of saving maternal and infant life under adequate full-term antenatal supervision, coupled with all possible obstetrical service and surgical skill during labor and puerperium would show in the above national death roll a decline of at least 30 to 50 per cent.

The increasing number of prenatal clinics, schemes for the betterment of rural obstetrics, enlistment and hearty coöperation of local and state boards of health and United States Department of Labor & Children's Bureau, all furnish active evidence of growing and more general efforts in reduction and waste of maternal and child life. As practical evidences of the above the Boston Prenatal Clinic during five years supervision of antenatal care guided 1512 mothers to the onset of labor without a maternal death. The graver forms of pathology were largely prevented or more effectively arrested. Sixty eclamptic manifestations during the first years were reduced under complete prenatal supervision and accorded obstetrical service until only five developed during the last year, with one postpartum death. Stillbirths dropped to one-half that of the city at large; premature births lowered to 1 per cent.; and infant mortality for first month reduced 50 per cent. below that of the Boston health report. The exhaustive report of the New York Milk Commission testifies to the life saving results derived from close antenatal supervision coupled with skilled midwifery as furnished in a series of 3000 births, where the maternal mortality and morbidity was reduced 69 per cent.; 22 per cent. reduction in stillbirths; and 28 per cent. decrease of infant deaths in first month.

Louis I. Dublin, Ph. D., estimates the value of public coöperation of antenatal, inter-, and postnatal supervision as applied largely to the industrial class of female policy holders of child-bearing age. The report covers a period of six years. Forty thousand pregnant and parturient women were annually accorded prenatal and maternity service, showing mortality from conditions and accidents incident to child-birth, of 10,056 mothers between ages of fourteen and forty-five. These deaths when related to totals under observation during six years represent a death-rate of 68.4 per 100,000 policy holders. Septicemia was responsible for 42 per cent.; toxemia and eclampsia for 26 per cent.; two conditions chargeable for 69 per cent. of total deaths. Under above general supervision the death-rate due to childbirth in its entirety gives a reduction of 10.7 per cent.; with 17 per cent. fall of mortality from toxemia and puerperal infection representing value of ante-, inter-, and natal supervision as a life protecting measure in the saving of over 1000 lives. In the maternity department of the Christian Church Hospital, Kansas City, Mo., during the past three years, 750 labors occurred. Toxicity in milder or graver forms was present in 7 per cent. of these cases; while almost every form of pathology, graver emergencies and accidents found in entire domain of obstetrics were encountered, including 21 Cesarean sections. These patients were accorded extended prenatal supervision by the obstetrical staff, including the conduct of labor under strictly antiseptic technic, regarding every woman as a surgical patient and according her all protection of a major operation, limiting and determining the progress of labor invariably by rectal examination, thereby diminishing dangers of infection, the condition of the child being determined by frequent and intelligent auscultation; as to location, frequency, and character of heart tones. A drop in the etal pulse to 110 or a sudden rise to 165 was regarded as a danger signal calling for the consideration of artificial assistance in completing delivery. With complete ante-, inter-, and postnatal supervision, in behalf of attending obstetricians, the analysis of three years work furnishes the following results: premature births 1.4 per cent.; full term stillbirths 3.6 per cent.; infant mortality under one month 1.3 per cent.; maternal mortality 0.26 per cent.; showing a reduction of stillbirths over the city's annual health report of 40 per cent. and maternal mortality reduction of 65 per cent.

In the increasing recognition of full period prenatal protection there has come a more frequent demand for an additional indispensable element of safety, namely the assistance of hospital trained or graduate nurses.

A great change has occurred on the part of expected mothers as to the frequency in availing themselves of hospital accommodations and intensive obstetrical service. Many not serving in the first line trenches of dynamic obstetrics may question the necessity of universal preparedness for motherhood, doubt the dangers, accidents, and pathological findings. Practical experience proves that the "red letter side" of the obstetrical ledger is increased or diminished in proportion to the absence or presence of adequate safeguards extended during gestation and the degree of obstetrical skill and surgical measures employed during labor, and puerperium. Antepartum care is not to be regarded as an alarmist measure or as meddlesome interference of normal gestation but assumes the role of a "safety first" preparation on the part of mother and unborn child. Prenatal care seeks to educate the public and the child-bearing woman in particular as to the necessity of general preparedness for motherhood; for gestation in many women of the present day is not a natural physiological process. It recognizes the value of hygienic procedures, the importance of beginning gestation in presence of healthy body, the necessity of thorough, physical examination, and the dangers of preëxisting or intercurrent diseases. It endeavors through propaganda and clinics to educate the public and remind the profession of the dangers of maternity.

Obstetricians as specialists realizing in consequence of the lack of antenatal protection and unsafe midwifery, that there are entirely too many crippled mothers and unhealthy children, should strongly urge in their interest, the hearty coöperation of the medical fraternity as a whole by impressing upon their female clientele of child-bearing age, the advantage and safety accruing from placing themselves under a competent medical adviser early in gestation, thereby promoting a more general recognition of prenatal-, inter-, and postnatal supervision.

702 BRYANT BLDG.

SPECIAL ARTICLE.

LEGISLATIVE MEASURES AGAINST MATERNAL AND INFANT MORTALITY: THE MIDWIFE PRACTICE LAWS OF THE STATES AND TERRITORIES OF THE UNITED STATES.

BY

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THE important part played by faulty obstetrics in causing a heavy infantile mortality at birth and during the first week of life, has been emphasized time and again whenever the question of infant mortality is considered. The International Medical Congress, in London, in 1913 was the last international gathering to give this problem merited attention. Since the great world war, probably every European country has taken it under consideration. In the United States the General Medical Board of the Council of National Defense appointed a Committee on Infant Welfare, which, in turn, named a Committee on Midwife Practice (1918) to look into this important matter. This committee, consisting of Dr. Taliaferro Clark, of the United States Public Health Service, Dr. J. Whitridge Williams, Dean and Professor of Obstetrics, Johns Hopkins Medical School, and the writer, believed that a survey of the existing laws enacted by various state legislatures would be of value in determining what additional remedial measures would be necessary to improve the present situation. Much of the material in the ensuing digest of laws, therefore, was gathered for the use of this committee. It is based on a partial digest in the records of the Children's Bureau, U. S. Department of Labor, prepared in 1916 by M. J. Wesel Providence, R. I., but hitherto unpublished, and on personal investigation by the writer of recent enactments of state legislatures.

Awakened interest in child hygiene has caused legislative bodies within the past few years to pass many new regulations or to amend old ones, so that these laws are constantly changing—usually for the better. This report has been prepared, therefore, as accurately as possible from the data at hand (1918), from which certain summaries have been made and conclusions drawn. The passage within the past two years of model laws by Virginia and other Commonwealths shows that progress is still being made. The writer acknowledges the invaluable aid of the library of the Children's Bureau, U. S. Department of Labor, but the Bureau is in no way responsible for any statements or conclusions found in this report.

Regulation of Practice.—Many State laws attempt to confine within definite limits the midwife's activities. In Maryland, she is forbidden to make a vaginal examination, attempt delivery of a retained placenta, attempt to use forceps, version or forcible delivery. In all abnormal labors a physician must be notified.

New Jersey does not attempt to define abnormal labor, but requires the midwife to summon a reputable physician "whenever any abnormal symptoms or signs appear in either mother or infant."

New York has provisions practically identical with Maryland. In addition the Health Commissioner of New York City, in the regulations which he made under authority of the Sanitary Code, limits the midwife's practice to uncomplicated vertex presentations and gives a list of ten symptoms, the occurrence of which makes it obligatory on the midwife to summon a physician. Careful details are given as to equipment, precautions for internal examination and an additional list of conditions during labor in which a physician must be summoned, is cited (Rule 10). When any one of seven specified conditions occur *after* labor, a physician must also be summoned (Rule 20). The New York Code is the most complete regulation of midwifery practice available. It was the only law up to the time of its publication which specified certain definite conditions in *the child* after birth, the occurrence of which should oblige the midwife to summon a physician.

Ohio defines abnormal cases as "to perform version, treat breech or face presentation or do any obstetric operation requiring instruments."

In Pennsylvania the limitation of practice lies with the State Board of Health.

Wisconsin limits the midwife to such practice as shall not include "the use of any instrument except such as are necessary to sever the umbilical cord, nor the assisting of childbirth by any artificial, forcible or mechanical means, nor the performance of any version nor the removal of adherent placenta, not the administering, prescribing, advising or employing in childbirth of any drug, herb or medicine other than disinfectant or ergot after delivery of the placenta." The act particularly points out also that the midwife cannot practise medicine, surgery or osteopathy, or assume any title, conveying the impression that she is other than a midwife.

Not every State which requires registration of births requires the midwife to report reddening or swelling of the eyelids. Separate penalties are specified for failure to do this, as well as for failure to use prophylaxis at the time of delivery in the States of Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Massachusetts, New Jersey, New Hampshire, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, Utah, Virginia, Vermont and Wisconsin (1915–1916).

In New York the treatment of such eyes is required to be placed in the hands of the local health authorities.

It will be seen that in all the foregoing regulations an attempt has been made to draw a line of demarcation between midwifery and the practice of medicine and surgery. The more complicated and the more specific such regulation becomes, the more closely does the midwife approach the status of a trained obstetrical nurse acting under the authority of the Board of Health, or its visiting physicians, and the farther does she depart from the midwife of rural, or as called in the South, plantation practice.

Registration of Births.—Registration of births is required and the midwife must file a birth certificate in 41 States and Territories, as follows:

Alabama, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, Nevada, New Hampshire, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, Utah, Virginia, Vermont, Washington, Wisconsin, Wyoming, Alaska and Porto Rico.

Registration oj Midwife.—The registration of the midwife herself is required in a number of States. This seems to have a twofold reason: first, in order that local authorities may exercise proper surveillance over her activities, and second, that she may be made acquainted with State and local regulations of her work.

In Connecticut she is required to report to the State Board of Health. In the following 20 States, she is required to register with the local registrar or the local health officer:

Colorado, Delaware, Georgia, Idaho, Illinois, Kansas, Kentucky, Maryland, Missouri, Montana, Nevada, New York, North Dakota, Ohio, Oregon, Pennsylvania, Utah, Washington, West Virginia and Wisconsin.

Educational Standards, Licensing and Examinations.—As to educational requirements, relatively few States had any adequate regulations until the last few years. In the medical practice acts of Arkansas and Mississippi exceptions are made in favor of the "midwife" or "so-called midwife." In Louisiana a midwifery act of reasonable scope contains a clause exempting those midwives who do "so-called plantation practice."

The following are the regulations concerning licensing in various States. In addition to the regulations cited, special provision is usually made for those who cannot speak English, such being allowed to use an interpreter. Foreign midwifery diplomas are usually recognized.

In Connecticut a certificate of character is required from two reputable citizens for residents, or for non-residents evidence of character satisfactory to State Board of Health. A certificate from a reputable school of midwifery or its equivalent is required plus an examination in writing by a board chosen by the State Board of Health. Examination fee is $15, plus registration fee for examination of $2.

Illinois requires a written application for examination accompanied by proof of good moral character and a fee of $5. The State Board of Health conducts the examination, which "must be of such a character as to determine the qualifications of the applicant to practise midwifery." An additional fee of $5 is payable upon issuance of the license.

Indiana requires a certificate from an obstetrical school of recognized standing to be presented to the State Board of Medical Registration and Examination, and a fee of $5, or the applicant may undergo an examination and pay a fee of $10. A certificate is issued to be exchanged for a license by the county clerk in the county in which the applicant desires to practise. Persons giving gratuitous aid in emergencies are exempted from the provisions of the act.

Louisiana requires submission to an examination by the State Board of Examiners, the Board having full power to determine the eligibility of the applicant. The examination fee is $10. The fee for registration with the Secretary of the State Board of Health or the Clerk of the Sixth District Court is fifty cents. Rural or plantation practice is excepted.

Maryland. Examination is required under the supervision of the

State Board of Health. To qualify for examination applicant must present a certificate from a legal practitioner of medicine or a maternity hospital certifying attendance on at least five cases of childbirth and delivery, applicant to be competent to attend ordinary cases of labor. A certificate of moral character from three reputable citizens is also requested. A fee of $5 is charged for examination; free re-examination is permitted within a year, in case of failure.

Minnesota. The State Board of Medical Examiners has authority to conduct examinations and issue certificates of proficiency. Examination is waived upon presentation of a diploma from a recognized school of obstetrics, with the consent of seven members of the Board. Fee for license upon diploma is $1; or examination $2. License must be renewed annually, subject to a fee of $1 for each renewal. The Board may revoke licenses if cause is shown.

New Jersey defines the practice of midwifery and requires examination by the State Board of Medical Examiners.

Applicants who had never practised before are required to submit to an examination of the State Board of Medical Examiners, the passing of which plus the payment of a fee of $5, entitles one to a certificate of practice, which is then to be filed with the clerk of the county in which applicant resides who carefully registers said certificate and receives for such registration the fee of $1 from the applicant.

Examinations are held at least twice a year. The applicant must present to the Board of Medical Examiners at least "ten days before the commencement of the State examinations, a written application on a form or forms provided by the said board, setting forth under affidavit the name, age, nativity, residence, moral character and time spent in obtaining a common school education, or its equivalent; that the candidate has received a certificate or diploma from a legally incorporated school of midwifery in good standing at the time of issuing said certificate or diploma, granted after at least two courses of instruction of at least seven months each in different calendar years, or a certificate or diploma from a foreign institution of midwifery of equal requirements as determined by the said Board, conferring the full right to practise midwifery in the country in which it was issued. The application must bear the seal of the institution from which the applicant was graduated. Foreign graduates must present with the application a translation of their foreign certificate or diploma, made by and under the seal of consulate of the country in which the said certificate or diploma was issued. The applications must be endorsed by a registered physician of New Jersey."

Upon the approval of the application, the applicant is entitled to register for the examination and is required to pay a fee of $15, which fee entitles applicant to a re-examination within one year.

"The examination may be oral, written or both, and shall be in the English language; if desired in any other language, an interpreter may be provided by said board upon notification to the secretary at least ten days before the examination. Examinations shall be held on the following subjects:

1. Anatomy of the pelvic and female generative organs;
2. Physiology of menstruation;
3. Diagnosis and management of pregnancy;
4. Diagnosis of fetal presentation and position;
5. Mechanism and management of normal labor;
6. Management of the puerperium;
7. Injuries to the genital organs following labor;
8. Sepsis and antisepsis in relation to labor;
9. Special care of the bed and lying-in room;
10. Hygiene of the mother and infant.
11. Asphyxiation, convulsions, malformation and infectious diseases of the new-born.
12. Cause and effects of ophthalmia neonatorum;
13. Abnormal condition requiring the attendance of a physician.

"Said examination shall be sufficient to test the scientific and practical fitness of candidates to practise midwifery, and the board may require examination on other subjects relating to midwifery from time to time." Board issues license if examination is satisfactorily passed, which entitles holder to practice midwifery in the State upon the filing of the license with the clerk of the appropriate county, who registers it for a fee of $1.

Refusal or revocation of license lies in the discretion of said board for any of the following reasons: "Persistent inebriety, the practice of criminal abortion, crimes involving moral turpitude, presentation of a certificate or diploma for registration or license illegally obtained, application for examination under fraudulent representation, neglect or refusal to make proper returns to the health officers or health department of births, or of a puerperal, contagious or infectious disease, within the legal limit of time; failure to file a state license, or a certified copy thereof, with the clerk of the county in which the licentiate resides or practises; failure to secure the attendance of a reputable physician in case of miscarriage, hemorrhage, abnormal presentation or position, retained placenta, convulsions, prolapse of the cord, fever during parturient stage, inflammation or discharge from the eyes of the new-born infant, or whenever any abnormal or unhealthy symptoms appear in either the mother or infant during labor or the puerperium."

New York specified that only legally licensed midwives may register with the local register of vital statistics for actual practice (Reg. 2).

License requires a written application sworn to be applicant on forms prescribed by the State Commissioner of Health.

Applicant must "be at least twenty-one years of age."

(*b*) "Be able to read and write; provided that in the case of applicants of foreign birth with extended experience or in other exceptional circumstances, this requirement may be waived.

(*c*) "Be clean and constantly show evidence in general appearance of habits of cleanliness.

(*d*) "Either possess a diploma from a recognized school of midwifery, or have attended under the instruction of a duly licensed and registered physician, not less than fifteen cases of labor and have had the care of at least fifteen mothers and new-born infants during lying-in periods of at least ten days each, and shall present a written statement from said physician or phys cians that she has received such instruction in said fifteen cases, with the name, date and address of each case, and that she is reasonably skilful and competent; and

(*e*) "Present other evidence satisfactory to the State Commissioner of Health of her qualifications and of good moral character vouched for by two reputable citizens." (Regs. 2, 3, 4 and 5.)

Each license so issued is valid for one year from its date unless revoked (Reg. 8).

Revocation of license may result "for cause, after having given the midwife an opportunity to be heard" (Reg. 9).

The following are the regulations in Ohio concerning license and practice:

All new applicants for the right to practise midwifery are required to submit to an examination arranged by the State Medical Board; upon passing a satisfactory examination and paying the fee of $10, the State Medical Board issues a certificate to that effect, which entitles its holder to practise midwifery in the State when it is deposited with the probate judge of the appropriate county. (Code 1910. Ch. 20. Sec. 1283, 4, p. 272.)

Application for examination must be in writing under oath on a form prescribed by the Board and be accompanied by a satisfactory proof that applicant is more than twehty-one years of age and of good moral character. At the time of her application the applicant shall file with the Secretary of the State Medical Board such evidence of preliminary education as is required by law of applicants for examination to practise medicine or surgery.

In addition to satisfying the requirements for the preliminary education as above outlined, the applicant "must present a diploma from a legally chartered school of midwifery in good standing, as defined by the Board at the time the diploma was issued, or a diploma or license approved by the Board which confers the full right to practise midwifery in a foreign country with her affidavit that she is the person named therein and is the lawful possessor thereof, stating her age, residence, the school or schools at which she obtained her education in midwifery, the time spent in each, the time spent in the study of midwifery, and such other facts as the State Medical Board requires. If engaged in the practice of midwifery, the affidavit shall state the period during which and the place where she has been so engaged."

In Pennsylvania.—The Bureau of Medical Education and Licensure is empowered to "formulate and issue such rules and regulations from time to time as may be necessary for the proper conduct of the practice of midwifery by midwives; to issue certificates to midwives who fulfill the requirements of the Bureau and to revoke any certificates previously issued;" also, to "refuse to grant a certificate to any person addicted to the use of alcohol or narcotic drugs, or who may have been guilty of a crime involving moral turpitude."

Applicants pay a fee of $10 to the said Bureau upon applying for a certificate to practise midwifery, which fees must be paid over to the Treasurer of the Commonwealth.

In Wisconsin.—In addition to a diploma from a reputable midwifery school the applicant is required to present to the State Board of Medical Examiners a certificate of good moral and professional character. "A college or school of midwifery to be deemed reputable by the Board shall be a training school for midwifery connected with a reputable hospital or sanitarium, giving a course of at least twelve months in the science and practice of midwifery and giving the students practical experience in at least twenty cases of confinement."

The written examination includes the following branches: anatomy of the female pelvis; anatomy and physiology of the organs contained in the female pelvis; symptoms, diagnosis, physiology and complication of pregnancy, diagnosis, course and management of labor and care of mother and child for the first ten days succeeding childbirth.

The certificate of registration is granted upon the passage of this examination if at least six members of the Board consent. (Pub. Laws, 1915, Ch. 438, Sec. 1435*p*, p. 556.)

The fee for the above mentioned examination is $10, with an additional charge of $5, for the issuance of the certificate. The fee for the examination itself must accompany the application for examination.

PENALTIES FOR VIOLATION.

Penalties for violation of the midwifery regulations are as varied as the regulations themselves. They may be classified as follows:

REVOCATION OF LICENSE AND FINE OR IMPRISONMENT, OR ALL.

Connecticut.—Fine of $100 or 6 months' imprisonment.

New Jersey.—$10 to $50 fine or imprisonment for 10 to 30 days for violation of provisions other than report of birth. For failure to report or for false report,.$50 to $100 fine.

New York.—For first offense, fine of $5 to $50; for third or succeeding offenses, $10 to $100 fine, or maximum of 60 days in prison.

REVOCATION OF LICENSE AND FINE.

Louisiana.—Fine, $50 to $200. Revocation also after second offense.

Maryland.—Fine, $5 to $10. Revocation after second offense.

Ohio.—Fine, $50 to $100, first offense; $100 to $300 subsequent. Revocation implied but not specified.

FINE.

Indiana.—$10 to $50, first offense; $100, third offense.

Rhode Island.—$2 to $20.

Vermont.—$5.

Kentucky.—Not to exceed $200.

Missouri.—$5 to $50.

Virginia.—Old law, $1 to $10.

New Hampshire.—$25.

Massachusetts.—$25 to $100.

Wisconsin.—$100 for failure to use ophthalmia prophylactic.

North Carolina.—$5 to $10.

North Dakota.—$5 to $100, also a forfeiture of all charges for attendance when midwife fails to report ophthalmia.

Porto Rico.—$1 to $15.

FINE AND IMPRISONMENT.

Minnesota.—$10 fine or ten days imprisonment.

Nevada.—Up to $50 fine or six months imprisonment, or both.

Oregon.—$50 to $250 or imprisonment up to thirty days, or both.

Pennsylvania.—A fine of $20 to $100 and costs or imprisonment from ten to thirty days, or both. Special penalties for failure to report births.

Wisconsin.—A fine of $25 to $100, or imprisonment for a maximum of six months, or both.

The mere passage of laws or drafting of regulations will not of itself regulate midwifery practice. The machinery for the enforcement of these regulations must be at hand This machinery is found in the State Health Department and particularly in the Municipal Health Department of the larger cities. But in thickly scattered districts such as rural communities, especially in the South, no such closely knit organization seems possible, and the regulations which would be admirable in an urban community would have to give way to some other less elaborate arrangement. As an example of a very complete set of Rules and Regulations, suitable for use in cities, the following is submitted.

SPECIAL RULES AND REGULATIONS FOR THE PRACTICE OF MIDWIFERY IN NEW YORK CITY.

Prescribed by the Commissioner of Health in accordance with Regulation 11, Chapter IV, of the Sanitary Code.

RULE 1. MIDWIFE TO SIGN PLEDGE.

Whenever a license is issued to a woman to practise as a midwife she shall be given a copy of the Vital Statistics Law, the Sanitary Code, and the special rules and regulations of the State Department of Health relating to midwives and the practice of midwifery, and she shall pledge herself to carry out said provisions and shall sign a pledge on a specially prepared blank.

RULE 2. MIDWIFE TO ATTEND ONLY NORMAL CASES.

A midwife shall attend only cases of normal labor in which there is an uncomplicated verter (head) presentation. In all other cases a physician must be called.

RULE 3. MIDWIFE'S HOME TO BE OPEN FOR INSPECTION.

The home of the midwife, her equipment, record of cases, and register of births shall at all times be open to inspection to the authorized officers, inspectors and agents of the local Health Office.

RULE 4. MIDWIFE TO BE CLEAN.

Each midwife must be scrupulously clean in every way, including her person, clothing, equipment and house. She must keep her nails short and keep the skin of her hands, as far as possible, free from cracks and abrasions by the use of lanolin or other simple application. When attending a case of labor she must wear a clean dress, of washable material, which can be boiled, such as linen or cotton, and over it a clean washable apron or overall. The sleeves of the dress must be so made that they can be readily rolled up above the elbows.

RULE 5. CASES TO BE REFERRED TO PHYSICIANS.

If, during pregnancy, any of the following conditions develop or are suspected, the midwife shall not engage to attend the case, but must refer it to a physician:

1. Whenever the patient is a dwarf or is deformed.
2. Whenever there is bleeding, or repeated staining in small amounts.
3. Whenever there is swelling or puffiness of the face or hands.
4. Whenever there is excessive vomiting.
5. Whenever there is persistent headache.
6. Whenever there is dimness of vision.
7. Whenever there are fits or convulsions.
8. Whenever there is a purulent discharge.
9. Whenever there are sores or warts of the genitals.
10. Whenever there is any case known to have syphilis, or suspected of it.

RULE 6. MIDWIFE'S EQUIPMENT.

Every midwife must take to each case the following equipment:
Nail brush,
Wooden or bone nail cleaner,
Jar of soft castile or green soap,
Tube of vaseline,
Clinical thermometer,
Agate or glass douche reservoir,
Two rounded vaginal douche nozzles; not to be used, except upon physician's order,
Two rectal nozzles, large and small,
One soft rubber catheter,
Blunt scissors for cutting cord,

Lysol,
Boric acid powder,
Silver nitrate solution outfit, furnished free by the Local Health Officer,
Medicine dropper,
Narrow tape or soft twine for tying cord,
Sterile gauze in individual packages, for cord dressing,
Sterile absorbent cotton (preferably in one-quarter pound packages)

No other instruments shall be used or owned by a midwife or kept in her possession. (Possession of these instruments will be taken to indicate their use.)

RULE 7. CONTAINER FOR EQUIPMENT; HOW TO BE KEPT.

The equipment specified in Rule 6 must be carried either in a metal case which can be easily boiled, or in a bag fitted with an inner lining of washable material, which can be easily removed and which must be washed and boiled before each case of labor. The bag and its contents must at all times be kept neat and clean. The douche nozzles for rectal and vaginal use must be marked and kept separately.

At every case, before using the nail brush, nail cleaner, douche reservoir and tubing, vaginal nozzle, catheter, scissors and tape or twine, they must be boiled for five minutes; when the labor is terminated, the douche reservoir and tubing, vaginal nozzles, catheter, scissors, nail brush, nail cleaner, must be washed with soap and water and boiled before replacing them in the bag or case.

RULE 8. PREPARATION FOR INTERNAL EXAMINATIONS.

Before making an internal examination or conducting a delivery, a midwife must prepare her hands and the patient as follows:

The midwife, after thoroughly washing her hands with warm water and soap, must thoroughly wash the patient's external genitals, the internal surface of thighs and the lower part of the abdomen, with warm water and soap, then rinse them with clean water and a disinfecting solution, prepared by adding one teaspoonful of lysol to one pint of water. She must then cover the genitals with a clean towel or cloth or cotton, which has been soaked in the disinfecting solution, and she must allow it to remain there until the examination is made. The midwife's hands must be cleansed and disinfected as follows:

Cut the finger nails short with clippers or scissors. Scrub the hands and forearms up to the elbows with the nail brush and green soap and warm water for five minutes, paying special attention to the nails and to the inner surface of the fingers. Then soak the hands for three minutes in the disinfecting solution. After having cleaned and disinfected the hands in this way, they must not come in contact with anything before touching the parts of the patient to be examined. Before each examination the midwife's hands and the patient must be prepared as above described. As few vaginal examinations as possible should be made.

No vaginal douche shall be given before labor.

RULE 9. MIDWIFE NOT TO LEAVE PATIENT.

A midwife in charge of a case of labor must not leave the patient without giving an address at which she may be found without delay, and after the beginning of the second stage she must stay with the patient until the birth is completed, and shall not leave for at least an hour after the expulsion of the afterbirth. Where a physician has been sent for because the case is abnormal or complicated, the midwife must await arrival and be ready to carry out his instructions.

RULE 10. PHYSICIAN IS TO BE SUMMONED DURING LABOR.

If, during labor, any of the following conditions exist or develop, a physician must be summoned immediately:

(*a*) The presenting part is other than an uncomplicated vertex (head),
(*b*) Fits or convulsions,
(*c*) Excessive bleeding,
(*d*) Prolapse of the cord,
(*e*) A swelling or tumor that obstructs the birth of the child,
(*f*) Signs of exhaustion or collapse of the mother,
(*g*) Unduly prolonged labor,
(*h*) When fetal heart has been heard and ceases to be heard.

RULE 11. IN CASES OF CONVULSION OR BLEEDING, PHYSICIAN TO BE SUMMONED.

After the birth of the child, if the mother develops convulsions or has excessive bleeding or has been lacerated, a physician must be called in attendance.

RULE 12. MIDWIFE TO EXAMINE AFTER-BIRTH.

A midwife must, in all cases, examine the after-birth (placenta and membranes) before it is destroyed and must satisfy herself that it has been completely expelled.

RULE 13. PHYSICIANS TO BE CALLED IF AFTER-BIRTH IS NOT EXPELLED.

Under no circumstances shall a midwife introduce her hand into the vagina or uterus to remove either the whole or parts of the after-birth (placenta or membranes). If, after an hour from the birth of the child, the mother being in otherwise good condition, the after-birth (placenta and membranes) is not expelled or cannot be expelled by gentle manipulation of the uterus through the abdominal walls, a physician must be called to extract it.

RULE 14. PROCEDURE AFTER DELIVERY.

After the labor is over the midwife must clean the skin around the external genitals with the antiseptic solution mentioned above, and then place a dry sterile pad over the vulva. The midwife must bathe and dress the patient in this manner at least once daily for five days after delivery, and also after each time that it is necessary to use a catheter. After the birth is complete the midwife must not make vaginal examinations. If it is necessary to catheterize the patient, the catheter must be boiled and the midwife after washing her hands (Rule 8) and before passing the boiled catheter, should separate the upper part of the vulva and wash the opening to the bladder by pouring the disinfecting solution over it from a cup or small pitcher that has been previously boiled.

RULE 15. SOILED ARTICLES TO BE REMOVED AFTER LABOR.

After the labor is over and before washing the baby, the midwife, should remove the soiled sheets, together with all soiled pads, newspapers, etc., that have been used to protect the mattress, leaving the patient on a smooth, dry, clean sheet.

RULE 16. STILLBIRTHS.

Should the child not breathe after birth, the midwife must report the fact at once by telephone or messenger, to the local Health Office, when an inspector will visit the case and countersign the stillbirth certificate which the midwife must leave at the house.

The fetus must not be removed from the premises until this certificate has been approved by the inspector from the local Health Officer and a permit has been issued by him.

RULE 17. USE OF SILVER NITRATE SOLUTION.

As soon as the child is born, and if possible, before the expulsion of the after-birth, the eyes should be washed with boric acid solution. The eyelids must then be separated and one or two drops of a one per cent. (1%) solution of silver nitrate dropped on the eye and the lids brought together.

One application only of the silver nitrate solution should be used, and ordinarily no further attention should be given the eyes for several hours.

The silver nitrate solution will be furnished free by the local Health Officer.

RULE 18. REPORTS OF CASES OF SORE EYES.

When the infant has or develops sore eyes, or any redness, inflammation or discharge from the eyes, the midwife in attendance must at once call a physician and must report to the local Health Officer the name and address of the mother, and state the time when such condition of the eyes was first noticed.

RULE 19. CARE OF PATIENT AFTER LABOR.

After labor, and throughout the lying-in period, the midwife must exercise due care in washing the hands and in dressing or catheterizing the patient.

RULE 20. PHYSICIAN TO BE SUMMONED DURING LYING-IN PERIOD.

If, during the lying-in period, any of the following conditions develop, a physician must be summoned:

1. Whenever there are convulsions.
2. Whenever there is excessive bleeding.
3. Whenever there is foul-smelling discharge (lochia).
4. Whenever there is a persistent rise of temperature to 101° F. for twenty-four hours.
5. Whenever there is swelling and redness of the breasts.
6. Whenever there is a severe chill (rigor) with rise of temperature.
7. Whenever there is inability to nurse the child.

RULE 21. PHYSICIAN TO BE SUMMONED IF CHILD DEVELOPS CERTAIN CONDITIONS.

Every child should be thoroughly examined after birth and if the child has or develops any of the following conditions a physician must be summoned:

1. Whenever there is a deformity or malformation or injury.
2. Whenever there is inability to suckle or nurse.
3. Whenever there is inflammation around, or discharge from the naval.
4. Whenever there is swelling and redness of the eyelids with a discharge of matter from the eyes.
5. Whenever there is bleeding from the mouth, navel or bowels.
6. Whenever there is any rash, sores or snuffles—suggestive of syphilis.

RULE 22. MIDWIFE TO ATTEND CASES SEVEN DAYS AFTER LABOR.

The midwife shall visit her patient at least once daily for seven days after labor, giving the necessary attention to the toilet and bed of both mother and infant. She shall record the pulse and temperature of the mother at each visit and give proper directions as to food of mother and nursing of the child during the periods between her visits; she shall give instructions how to keep the air in the patient's room fresh; she shall arrange to have the baby sleep in a basket or crib, instead of in the bed with the mother; she shall watch constantly for any symptoms of the complications or abnormalities described in Rules 5, 20 and 21.

She shall give to the child its daily bath and attend to the dressing of the cord and the cleansing of the mouth.

RULE 23. DISINFECTION OF MIDWIFE'S EQUIPMENT, ETC., AFTER INFECTIOUS DISEASE.

Whenever a midwife has been in attendance upon a patient in contact with any person suffering from puerperal fever or from any other condition known or believed to be infectious, she must disinfect herself, her clothing and all the contents of her bag and other appliances before going to any other maternity patient. In order to disinfect her person, a midwife must take a hot bath and must wash her hair. She must disinfect her hands as in Rule 8.

She must make an entire change of clothing and have all garments she wore while in attendace upon the infected person washed and boiled. Those garments which cannot be washed should be well and repeatedly shaken during the course of two days, and hung out in the open air so that they may be exposed to the rays of the sun. Care should be taken to change their exposure frequently so as to insure the sun's reaching every part.

Should the midwife herself contract a local infection, such as a sore on her hands or an abscess or boil, or a communicable disease, such as diphtheria, scarlet fever, typoid fever, etc., she shall not attend cases of confinement or visit her patients until she has entirely recovered and disinfected herself, her clothing, and all the contents of her bag and other appliances and has received a certificate from the local Health Officer.

After any case of communicable disease the house must be thoroughly cleansed and the floor and surface of midwife's bedroom scrubbed with soap and water. Bedding must be washed and boiled. Carpets, hangings and other articles which cannot be boiled must be sunned and aired.

RULE 24. REPORT OF BIRTHS.

Within five days of the birth of the child, the midwife must *file* a complete and correct birth certificate with the Local Registrar of Vital Statistics of the Registration District (town, village or city) in which the birth occurred. It is not sufficient to mail a certificate on the fifth day; it must reach the registrar in correct form within five (5) days.

CONCLUSIONS.

As will be seen, there is no uniformity of law, or even of required standards. The establishment of competent and reliable teaching centers to educate women in this work seems hardly possible, even if it were desirable. The ideal regulation seems to be that in which the midwife is told many things which she must *not* do and is placed in the position of a more or less well-trained obstetrical assistant. Dr. Williams believes that community centers, even in the rural districts, with paid physicians as supervisors and well-trained obstetrical visiting nurses as educators, would solve the problem of the midwife and her training. With a supervising nurse to counsel her and watch her and a physician to make preliminary examination and be available in case of need, the midwife would cease to be a practitioner of medicine and surgery, menacing the health and the life of mother and child, and would occupy a definite place and fill a definite need in the scheme of social welfare of every community.

In regulations prescribed by the Commissioner of Health of New York City are perhaps the best midwifery laws now in force. To apply to smaller or rural communities this set of rules would have to be modified in its details, though not in its essentials.

Uniform legislation for the enforcement of birth registration and ophthalmia prophylaxis, for proper inspection of the midwife by both the Health and Police Departments of the city or state, and for the prohibition of unsupervised obstetrical practice by any midwife however theoretically qualified, are the minimum essentials in which all state and city laws should have complete uniformity. These, in the main, were the recommendations in the unpublished report of the sub-committee on Midwife Practice, recommendations which were based partly on the somewhat negative findings of the foregoing digest of laws, but more largely on the long study and experience of Dr. J. Whitridge Williams in community obstetrics, and Dr. Taliaferro Clark's facility in dealing with problems of public health.

1861 MINTWOOD PLACE.

CLINICAL CASE REPORTS, NEW APPARATUS, ETC.

A REPORT OF THREE CASES PRESENTING UNUSUAL PATHOLOGICAL AND CLINICAL POINTS OF INTEREST.

BY

M. R. ROBINSON, M. D., F. A. C. S.,

New York, N. Y.

(With three illustrations.)

CASE I.—*Huge Papillary Adenocarcinoma of the Right Ovary, Operation, Recovery, Full Term Normal Gestation Seventeen Months Later, Free from Recurrence for Four Years.* On October 15, 1915, P. S., aged thirty-five, consulted me on account of a rapid increase in the size of her abdomen, within the past four weeks. She has given birth to three children, the last one ten years ago. Her labors and puerperiums were normal. Her menses began at the age of seventeen regular in type, painless, and moderate in amount. For the past four years the menstrual cycles are somewhat irregular, they appear once every six, eight to ten weeks. Her last period has occurred one week ago.

Physical Examination of the Abdomen and the Pelvis.—The abdomen is enormously distended by a large globular, uniform cystic tumor, the upper level of which extends beyond the free border of the ribs, up to the ensiform cartilage. Percussion elicits dulness all over, and there is no change in the percussion note with alterations in the position of the patient. The cervix and the uterine body can be palpated with ease. The uterus is normal in size and contour, but is displaced upward and forward above the symphysis, by the abdominal tumor posteriorly. A diagnosis of a large ovarian cyst was established and operation advised.

Operation.—On October 18, 1915, I performed a right salpingo-oöphorectomy. On opening the peritoneal cavity the tumor came into view. It was bluish in color, with a smooth glistening surface. Its upper pole rested against the diaphragm, and it was not adherent to either the viscera or the peritoneum. After having aspirated the greatest part of its fluid contents, it became evident that the rest of it was of a semisolid consistency. This portion of the growth equalled in size that of an adult head. The tumor was removed with comparative ease, the abdomen was closed in the usual manner, no drainage was employed, although some of the fluid from the cyst, was spilled into the peritoneal cavity during the operative procedure. The patient has made an uninterrupted recovery, and was discharged from the hospital on the twelfth day post operationem.

Pathological Report No. 6388 (Beth Israel Hospital).—The specimen consists of an enormous ovarian cyst. The walls of the collapsed portion are thick, measuring in some parts from a half to one centimeter. The color is, bluish black, with many areas of necrosis and hemorrhage. The rest of it is multilocular in nature. The cystic cavities are filled with a semisolid gelatinous mass, consisting of necrotic tissue. Sections taken from different parts of the tumor showed the classical morphology of papillary adenocarcinoma (Fig. 1).

Subsequent Observations and Clinical Course.—For one year following the operation I have reëxamined my patient at stated intervals of six weeks, watching for a possible recurrence, with the gratifying result, that none has appeared during this interval. From now on up to Feb. 11, 1917 my further observation has been interrupted, by the patient's refusal to report for reëxaminations. At this time she has come to solicit my services as an accoucheur, and on March 15, 1917, I delivered her of a full-term normal baby.

I have reëxamined this patient on June 8, 1919, and found her pelvis and abdomen free from neoplastic involvement. Her menses are recurring at fairly regular intervals, but the amount is gradually lessening. She is suffering but slightly from preclimacteric molimina otherwise she is well.

Comments.—Every surgeon finds himself in a dilemma, when after having removed an apparently benign ovarian tumor, the pathological report proves that it is malignant. How is he to proceed? Shall he resort to a more radical operation, as soon as the patient's condition permits, or should he follow the expectant plan? The vathological subdivision of ovarian cancer may be of some clinical palue in helping us to decide upon the modus operandi.

Ovarian cancer is subdivided into three groups, (*a*) The primary type. In this class are included the cases where the cancer formation begins in the ovary *per se*. The affection is bilateral, the tumors rarely exceed in size that of the normal ovary, and macroscopically, before metastasis makes its appearance, it is difficult to make a diagnosis. Microscopically all parts of the ovarian stroma are equally involved. This last-named pathologic fact serves as a differential diagnostic point between this and the other type. (*b*) The secondary type, or which may better be termed the implantation type. In this class the cancer is grafted upon the ovaries, from a primary carcinoma of the stomach, the intestine, or the mammary gland. The diagnosis in this variety can be made with greater facility than in the preceding one, as the clinical history and the pathological lesion in the primary focus pave the way. (*c*) The third and last class of ovarian carcinoma, is in fact a degeneration process, or a transition form from a benign into a malignant growth. The change begins in a previously simple adenoma or papillary

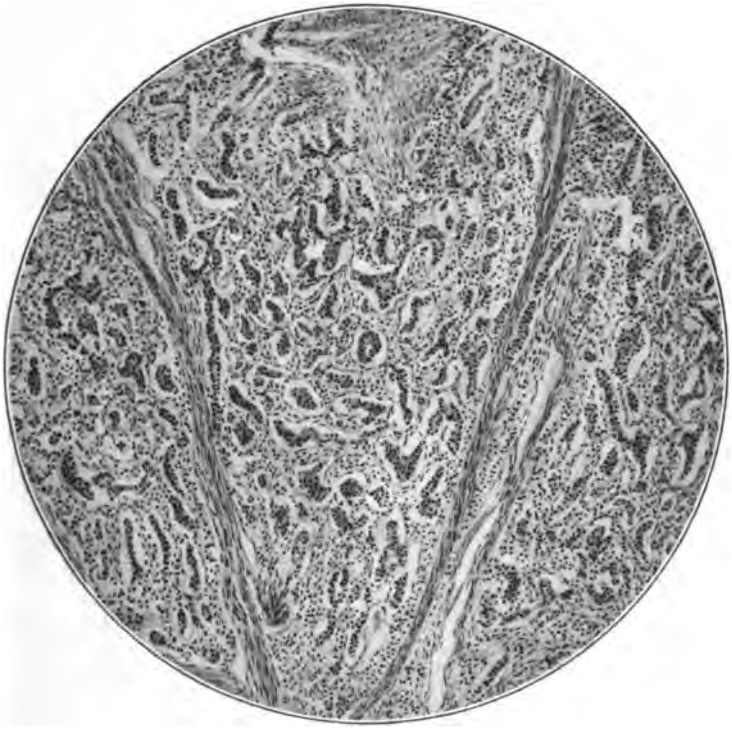

FIG. 1.—Papillary adenocarcinoma of ovary.

adenoma. The tumors reach large proportions, the affection is unilatteral, and if a similar process should start in the other ovary at some future time, it must not be considered as a recurrence, but rather as a new carcinomatous development. If removed early, before the growth has broken through the germinal epithelium, the prognosis is most favorable. The case I have cited belongs to this group. As to the time limit, before a cure may be pronounced most authorities agree, that in this class of cases, a four-year limit is sufficient.

CASE II.—*Resection of a Large Spindle-celled Sarcomatous Tumor of the Mesentery, Together with 6 Inches of Ileum, Recovery.*—P. W., aged forty-nine, consulted me on July 11, 1918, complaining of pain in the right lower quadrant of her abdomen, which began rather acutely about two months ago. Since then the pain is dull and annoying in character, and becomes aggravated whenever she attempts to turn from right to left, when in a reclining position. Her menstruation is still continuing to appear in a fairly normal manner, she has menstruated last one week ago. She has given birth to six children, the last one eight and a half years ago.

Physical Examination of the Abdomen and the Pelvis.—The abdomen is soft and relaxed. A freely movable tumor is palpable in the right iliac fossa, of a solid consistency but not hard. Its outline is irregular, and in size corresponds to that of two adult fists.

It can be displaced upward as far as the umbilicus, and to the left of the median line, without causing the patient much discomfort. The anterior and posterior vaginal walls bulge, forming a cysto- and rectocele of the second degree. The uterus is normal in size and position, somewhat harder than normal, and the cervix is lacerated bilaterally. The left adnexæ cannot be felt distinctly, and the right are presumably the seat of the tumor felt abdominally. A tentative diagnosis of dermoid cyst of the right ovary, with a twisted pedicle, seemed to be the most likely one.

Operation.—On July 16, 1918, I performed the following operation. After having repaired the vaginal relaxation, I started to remove the tumor abdominally. On opening the peritoneal cavity, I have found that the supposed ovarian dermoid was a tumor of the mesentery, with a loop of ileum crossing its upper anterior surface, and closely adherent to it (Fig. 2). The tumor including the overlying portion of intestine, from a point about 1¼ inches from the tumor on the proximal side, to a similar point distally, was removed *en masse.* This was followed by an end-to-end intestinal anastomosis and the abdomen closed in the usual manner. The patient made an exceedingly smooth convalescence, and was discharged on the fourteenth day. She has remained free from symptoms up to the present and is enjoying good health.

Pathological Report No. 9062 (BethIsrael Hospital).—The specimen consists of a bilobed tumor measuring 4½ by 3¼ by 3¼ inches. It is of a solid consistency throughout excepting in the center which is occupied by an irregular cavity. In color it is bluish gray. Its lobulation is accentuated by the coil of small intestine which is closely adherent to it, and grooves its upper surface. The intestine itself is free from neoplastic invasion. The mesenteric leaves are spread apart by the tumor, encircling it in its entirety. Sections were taken from different parts of the tumor and all showed the characteristic structure of spindle-celled sarcoma (Fig. 3).

Comment. Solid sarcomatous tumors of the mesentery are among the rarest of abdominal neoplasms. Up to 1915 only eighty-five cases were recorded in the entire literature. Since then four more cases have been described by the following authors; Beneke(1), Chiaravalloti(2), Vineberg(3), and Speese(4). The addition of my own case will make a sum total of ninety-five cases. The case of Beneke and that of Vineberg are similar in almost every respect to my own. Vineberg and myself seem to have been the only ones to have obtained recoveries, or possibly cures, the other three cases cited in this report terminated fatally. From a study of the three last-named cases I have arrived at the conclusion that the poor results were in the main due to two causes, (*a*) an attempt to enucleate the tumor mass without the adherent intestinal loop, (*b*) to some error in the technic of the intestinal suturing.

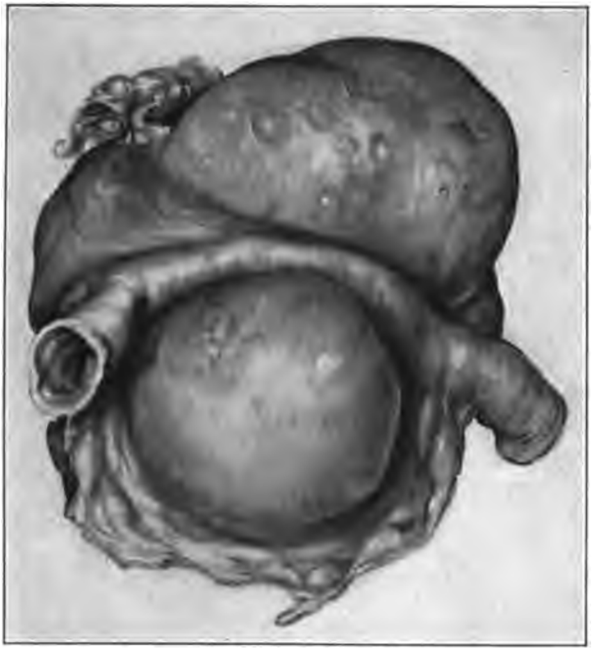

FIG. 2.—Spindle-celled sarcomatous tumor of the mesentery with adherent segment of the ileum.

CASE III.—*Primary Carcinoma of the Fallopian Tubes.* D. Z., aged fifty-six, came to my clinic at the Beth Israel Hospital on

June 11, 1917, complaining of a prolapse of her uterus, which is causing her great discomfort. The abdominal walls were found to be relaxed, no tumors were palpable, and no tenderness is elicited anywhere. Vaginal inspection shows a prolapse of the uterus, the cervix extending to a distance of one and a half inches beyond the introitus. No digital examination was made by me at this time.

Operation.—On June 14, 1917, I performed a vaginal panhysterectomy, followed by a plastic on the relaxed vaginal outlet. The operation was somewhat complicated, by the presence of an intraligamentary cyst, the size of an orange, on the right side, which was not diagnosed previous to operation. The reason for this diagnostic error was due to my carelessness in failing, as I have stated above, to make a digital examination. The patient has made an uneventful recovery.

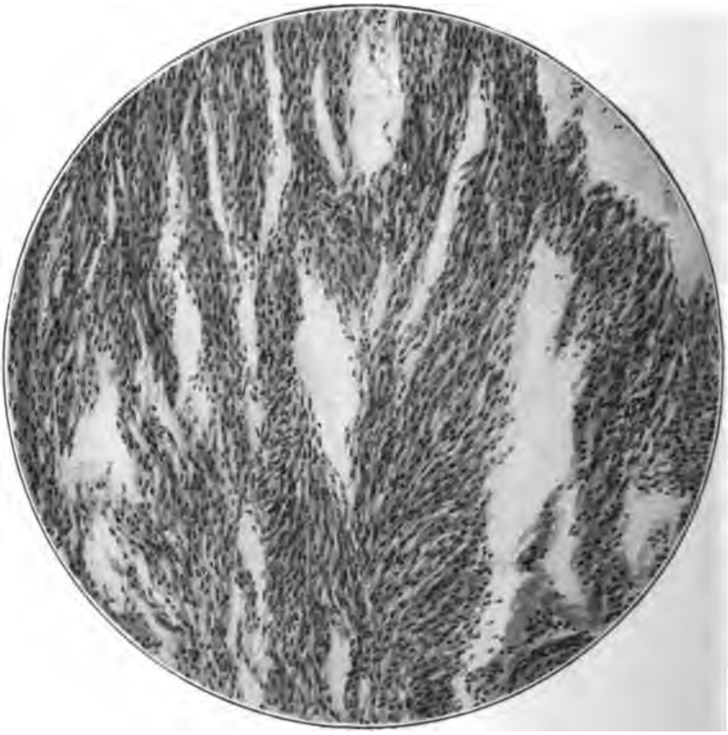

FIG. 3.—Spindle-celled sarcoma of mesentery.

Pathological Report No. 8116 (Beth Israel Hospital).—The specimen consists of a uterus and its adnexæ. The uterus contains a fibromyoma interstitial and subperitoneal in type, the size of a small egg. The right broad ligament contains a collapsed sack of a previous cystic tumor. Both Fallopian tubes are chronically inflamed, thickened in some parts to the size of a lead pencil, the fimbriated ends are closed, and they are adherent, the right one to the cyst wall, and the left one to the corresponding ovary. The uterine tumor shows the ordinary structure of a fibromyoma, the ovaries are presenting a picture of chronic oophoritis, and sections taken from different areas of the tubes show the morphological changes of adenocarcinomatous degeneration.

EPICRISIS.

All the theories advanced so far, concerning the genesis of benign or malignant neoplasia, must still be considered as purely academic and speculative. But no matter what the presumptive etiological factor may be, whether chemical, mechanical, thermal, electrical, or biological, one fact stands out quite clearly, and that is, that each of them calls forth in the tissues an inflammatory reaction. This apparently protective response on the part of the tissues to irritation, forms in reality the first impulse to neoplastic formations. In my study on "The Pathogenesis of Adenomyosalpingitis"(5), I have proven, that gonorrheal and tubercular inflammations of the tubal mucosa, were responsible for the development of the adenomatous tumors. It therefore requires but a little stretch of our imagination to see, how this very same stimulus, may, if continued for a much longer time, bring about malignant transitions in a previously benign growth. Lubarsch(6) denies this possibility. Orth(7) on the other hand states "among the recently reported cases of papillary new-growths, are some which may be correctly deemed benign, and others which are malignant; from the great resemblance of these to one another, it is safe to accept the view that there is at least a danger of cancerous transformation." Cullen(8) says "there is a possibility that a benign tumor may change into a malignant one." Le Count(9) has furnished additional supportive evidence to the view, that inflammatory changes are the precursors of carcinomatous transformation in many instances. The cases embodied in this report point most clearly to the correctness of this view, for each of them (the first and the last in particular) showed distinctly that inflammatory processes have preceded the malignant development.

These pathological facts also teach us the important clinical lesson, which is so seldom heeded, that "in the beginning every malignant growth is a local process." If we could only succeed in awakening the laity to the significance of this fact, and make them submit to operation, for every tumor, as soon as diagnosed, with the same comparative readiness, as they now do in cases of appendicitis; the morbidity and the mortality from malignant affections would be reduced to a minimum.

1261 MADISON AVE.

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A LARGE SUBSEROUS TUBAL CYST CAUSING TRIPLE TORSION AND GANGRENE OF THE TUBE, SIMULATING AN OVARIAN CYST WITH A TWISTED PEDICLE.

BY

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(With one illustration.)

GYNECOLOGISTS have frequently encountered tubal cysts, but usually associated with additional complicating factors which sufficed to explain the origin of the cyst and its symptomatology. The case described below, however, presents several unusual features, which appeared to be worthy of record, for in spite of careful search of the literature, it was impossible to locate a report of cases of similar derivation and presenting similar aspects.

E. B., aged twenty-nine, born in U. S., was referred to the surgical division of the Kings County Hospital on May 17, 1919, as a case of acute appendicitis. After the following history with a physical examination the author accepted the case with the diagnosis of an ovarian cyst with a twisted pedicle. The patient gave the following history:

Onset.—Four days previous to admission she was seized with severe pain in the back on the right side, the pain was sudden, sharp, constant, non radiating, causing great distress. Pain migrated to the region of McBurney's point, thence to umbilicus and now entirely on the right side.

Menstrual History.—Began menstruating at age of fourteen, twenty-eight-day type, four or five days duration, moderate flow, without pain. Has always been regular even after marriage. Her last regular menstrual period was on April 19, 1919, which was on time and normal throughout.

Marital History.—Married at eighteen, eleven years ago, had three pregnancies with normal deliveries, two of these pregnancies terminated prematurely, children living, ages eleven, seven, three and one-half. No abortions.

Physical Examination. Abdominal.—Considerable rigidity of the lower right quadrant, with pain over McBurney's point, peritoneal reflex present, mass occupying right side and hypogastric region.

Vaginal.—Cervix of normal consistency, healed bilateral laceration, uterus retroverted and to the right, mass occupying left fornix that displaced the uterus to the right, mass movable and not adherent. No other pathological conditions found.

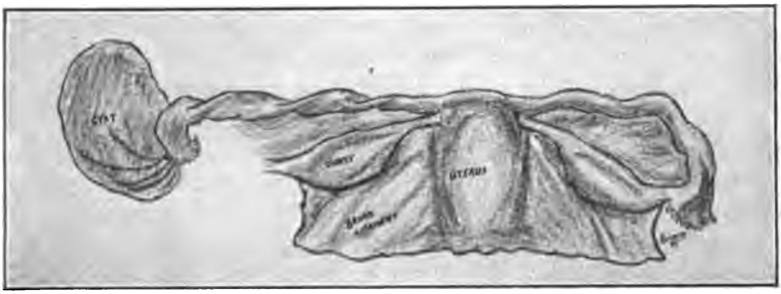

FIG. 1.—Posterior view of uterus and adnexæ showing tubal cyst and torsion of tube.

The above findings upon physical examination seemed to justify the diagnosis of an ovarian cyst with a twisted pedicle, which diagnosis was, however, not substantiated upon operation.

A midabdominal incision, from umbilicus to symphysis, exposed a bluish, discolored peritoneum and a cystic mass, the size of a large cocoanut, with the right Fallopian tube attached by its fimbriated extremity. The tube was found twisted upon itself three times and gangrenous. The twists were easily reducible. No additional pathological conditions were disclosed. The entire tube, cyst and ovary were removed *en masse.* The latter was sclerotic, small and cystic. The appendix was also removed for prophylactic purposes.

The hospital pathologist, Dr. Hela reported as follows:

The gross specimen consisted of an ovary, a Fallopian tube and cyst. The ovary upon section showed sclerosis of the parenchyma, several corpora in various stages of development and a moderate cyst of the follicular type. The tube histologically was normal; only was somewhat congested.

Near the fimbriated extremity was situated the cyst, the size and shape of a large cocoanut, containing a clear crystalline fluid, of 1011 specific gravity and enveloped in a fibroserous coat, with several of the fimbria closely adherent to it. The whole mass was evidently localized between the muscular and serous layer of the Fallopian tube.

The literature offering detailed description of the origin of large cysts is quite meager. Many investigators such as Hamilton Bell, Demoris and Frieux of Bordeaux, Ott and particularly Kossman and Hausley, deny the origin of true serous cysts of the tube. They expound the theory that all large tubal cysts are instances of hydrosalpinx of accessory tubes. Sanger in his classification, assigns the lymphangiectatic cyst which is a large, tough walled, isolated cyst in the tubal serous covering of the mesosalpinx as a distinct entity.

Other authors, however, admit the possibility of the existence of small serous cysts of the tube. Stengel say that small cystic formations of obscure origin are sometimes found in the peritoneal covering of the tubes and along the attachment of the broad ligament. Their contents may be colloid or serous.

Montgomery relates that cysts of small caliber are frequent, though their true cystic character he denies. He further states that cysts varying from the size of a pea to that of a walnut are found in every part of the wall of the tube but most frequently beneath the peritoneum.

In reference to the etiological factor of the serous cysts many diverse opinions exist. Stoltz favors the idea that their origin lies in the infold of the peritoneum. Zidel believes that the cysts are formed by the apposition of two layers of the peritoneum and describes a cyst found at the fimbriated end of the Fallopian tube due to adhesions between peritoneal surfaces. The inner surface of the cyst was lined with endothelial like cells. Petit quotes Pozzi as saying that cysts originally are located within the broad ligament and travel upward to the serous membrane covering the tube. Petit believes that they originated from the mesothelium of the peritoneum.

Delafield and Prudden state that cysts with thin walls are often seen in the peritoneal coat of the Fallopian tube and believe them to be of embryonal origin. Dickinson concludes that these cysts are dilated lymph spaces and are associated with those diseases of the tube or neoplasms of the generative organs which are capable of interfering with the free circulation of lymph in the tubal peritoneum. This, however, is not the condition of the case reported by the author because no pathological deformity of any other pelvic organ was found with the single exception of a sclerotic right ovary which could not account for the interference with the lymphatic circulation.

A careful perusal of the literature of the past twenty years has failed to reveal a case similar to the one above described, although similar conditions with various complications are described in foreign literature. Text books, written by Findley, Crossen, Penrose, Kelly and several others in their classification of tumors or cysts of the Fallopian tube were perused. Only Graves mentions the fact that large cysts have been described as originating in the subserous tissue of the tubes and occurring especially in connection with uterine fibroids.

490 STONE AVENUE.

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A NEW METHOD OF APPLYING HEAT TO PATIENTS IN SURGICAL SHOCK.

BY

STANLEY L. FREEMAN, M. D.,

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Wilkes Barre, Pa.

(With one illustration.)

THE inserted diagram is a schematic representation of bed, position, and heat appliance used in the treatment of surgical shock at the Woman's Hospital. It has been adopted because of the facility and efficiency with which the needed heat in postoperative shock cases can be evenly distributed over the entire body. It does away with hot water bottles, which retain heat for only a short period of time, and need frequent changing, with considerable disturbance to the patient. The procedure may be easily applied anywhere where an electric lighting current is available. The heat is constant, evenly distributed and is capable of raising the temperature in the bed several degrees. The device here shown consists of shock blocks, bed, heating lamp, sold in any electrical supply store.

The device referred to above is constructed as follows: the inserted diagram will assist in its preparation.

I. Ordinary hospital bed elevated at the foot, with shock blocks, to the height of 12 inches.

II. Patient covered with ordinary bed clothing plus bed blankets arranged as shown in diagram.

(*a*) Blankets are double blankets, three in number. If single blankets are used, then four blankets are necessary.

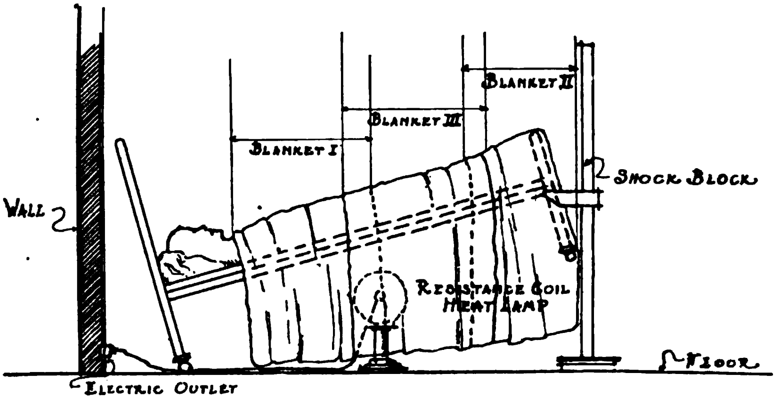

Fig. 1.—Diagram of bed showing disposition of blankets and heat unit for patients in shock.

III. Blanket No. 1 is placed up to the patient's chin, covering chest and neck and upper abdomen. Blanket No. 2 is next applied, covering legs and feet and placed so that it hangs over the foot of the bed clear to the floor. All blankets should reach to the floor in order to cover the space under the bed on all sides. Blanket No. 3 is then placed on overlapping blankets 1 and 2.

(*a*) All blankets are placed the long way transverse to the length of the bed. If single blankets are used then the fourth blanket is placed long end parallel to the bed and extending down over the foot to the floor.

IV. When properly arranged the space underneath the bed is entirely covered in by blankets clear to the floor, except the head of the bed, making a closed chamber.

V. The resistance coil lamp is best placed on the floor at about the center of the bed equidistant from all the blankets.

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AMERICAN JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN
NOVEMBER, 1919

ABRAHAM JACOBI, M. D., LL, D

BORN, 1830. DIED, 1919.

VI. The lamp used for generating the heat is the ordinary resistant coil heat generating lamp, sold in all electrical supply stores. It is a medium sized one and covered by a guard.

VII. It is necessary for the nurse to watch the patient carefully and remove the lamp as soon as the patient's temperature has reached normal or slightly above.

VIII. The bed may be heated in this manner also before the patient enters it.

IX. None but good results have followed the use of this method.

132 South Franklin Street.

IN MEMORIAM.

ABRAHAM JACOBI, M. D., LL. D.,

(1830–1919)

Dr. Jacobi may well be accounted among our most prominent American medical men of the century, an eminence due not merely to professional attainments but to his substantial qualities as a citizen and a man. Practically an outcast from the land of his birth because of the liberal and advanced ideas which culminated in his participation in the German revolution of 1848, he came to this country a stranger to its language and customs. His eminent and irrepressible genius found the necessary favorable environment for its growth and development. Of this opportunity he took every advantage and a long professional and public career of sixty-five years bore ample evidence of his success as a clinician, teacher, councilor, administrator and publicist. In Dr. Jacobi the enthusiasm of youth never seemed to wane notwithstanding his progress in years far beyond those of the Psalmist's limit and his tireless mind and energy even in the declining period of his long life may well serve as a stimulus to the ambitions of younger colleagues. A keen sense of wit and the ability to see and appreciate the humorous side of things, served no doubt to make his existence a happy one; this, and an interest in his work which continued almost to the day of his death.

To Doctor Jacobi has long been accorded the honor of being the founder of the science of pediatrics as a specialty of medicine in this country. The foundation laid in the German universities of Greifswald, Göttingen and Bonn served to develop and round out his later work in New York City, where he taught his favored specialty in various medical schools, occupying for many years the Chair of Pediatrics at the College of Physicians and Surgeons. The founding of the German Hospital (now the Lenox Hill) and the well-known Jewish, Mount Sinai Hospital, both in New York, was associated with his early years.

Dr. Jacobi was held in high regard by his professional colleagues as well as by many of our citizen body, for he was ever ready to give aid and assistance to those who sought the same in any measures for the public welfare. The quite general acceptance of Dr. Jacobi as Dean of American medical men, culminated in his elevation to the presidency of the American Medical Association some years ago. Curiously enough his annual address on this occasion dealt with an obstetrical topic—the midwife—and his plea for the retention of this "institution" was based on sentimental rather than on modern or scientific reasons. This attitude may perhaps be accounted for by the fact that in the early years of his practice, Dr. Jacobi was more or less closely associated with obstetrics in New York City, being one of the early members of the Obstetrical Society and apparently very active in its work. Thus we find in the first issue of this Journal a reference to his work on the staff of the Nursery and Child's Hospital and on numerous other occasions the transactions of the New York Obstetrical Society contain papers and reports of cases read by him. These were largely pediatric in character, for in those early days, the differentiation into specialties was not as close as it is to-day and it seemed quite appropriate for the diseases of children to be discussed at these meetings. The second volume of the AMERICAN JOURNAL OF OBSTETRICS, which is dated 1870, includes the name of Dr. Jacobi as co-editor and we find him a frequent contributor to its pages even after his editorial connection had ceased a few years later.

Dr. Jacobi was a voluminous writer and had a profound and widespread knowledge of the literature of pediatrics. His library was extensive, he kept it up-to-date and it constituted one of the joys of his life. The text-book on "Therapeutics of the Diseases of Children" was a classic in its day and written in a style that contributed largely to its interest and popularity among medical students.

In 1873, Dr. Jacobi married Dr. Mary Putnam, likewise an eminent physician, who died in 1906.

The New York Pathological Society, Obstetrical Society, Academy of Medicine, County and State Societies, American Pediatric Society, and many others numbered Dr. Jacobi among their active members, in addition to which he also held honorary membership in several foreign societies.

Perseverance, prodigious industry and activity, a high regard for professional honor and courtesy, an altruistic conscience and charitable spirit, a readiness to make friends, all these contributed to make of Dr. Jacobi a figure to be held in eminence and respect, whose achievements constitute a bright page in the annals of American medicine.

INTERNATIONAL CONFERENCE OF WOMEN PHYSICIANS AND CONVENTION OF DELEGATES FROM NATIONAL WOMEN'S ORGANIZATIONS.

Held in New York City from September 15 *to October* 25, 1919.

Under the auspices of the Social Morality Committee, War Work Council, National Board of the Young Women's Christian Association.

FOREWORD.

The International Conference of Women Physicians was assembled in response to a newly created situation growing out of the war. Previously characteristics of women, such as delicacy, physical weakness, timidity and ignorance of the facts of life seemed trivial. Under war conditions good health became an asset to every woman and hence was possible of realization as never before. The fact became increasingly evident that medical women would have a special contribution to make toward the development of the health of women and children. The time was ripe. They had come to recognize the need for the establishment of the health and strength of women on a higher level; to recognize that women must possess greater physical stamina if they were to make an effective contribution to industry and business without injury to the oncoming generation.

Women physicians, in the second place, saw in the exigencies produced by the war that ignorance of women in matters of sex, and their lack of understanding of their own emotional impulses, were bound up with their physical weaknesses.

In response to the changes brought by the war, this conference was called that it might bring women physicians together from all nations to consider ways in which the physical condition of women might be improved and their ignorance and immaturity of attitude toward sex and emotional health eliminated. It was not the object of the conference to discuss these questions from the research point of view, but rather from that of their practical bearing on the problem of the development of a more vigorous and responsible type of woman.

DR. AUGUSTA RUCKER, of New York, gave a demonstration on

PHYSICAL EXAMINATIONS AS A MEANS OF HEALTH EDUCATION.[1]

She called attention to the question "Is civilization tending to run down hill physically?" The draft examinations in this country showed one-third of the men in the prime of life unfit to fight, and England showed about the same proportion. Many of the ills could have been remedied in early youth; they were the result of underfeeding, under-nourishment, under-education. But what would the examination have shown for our women? We have made routine physical examinations of various groups of people examining from schools, from large industrial places, from factories, from kindergartens. We have examined the wealthy, professional women, industrial women, and women who are known as failures. What have we found? First the teeth. Almost the only good ones these days are artificial ones. Children are fed soft foods and are not taught to chew; if they were given a bone, as in primitive times, or a dry piece of bread, the jaws would be pushed out and you would not see the irregular position of the teeth.

Then in regard to posture. As you go along you see the round-shouldered people, protruding abdomen, feet rigid, toeing out, but you get this posture with a pulling down of the abdominal organs, and the drag on the sympathetic system that seems to dam the higher mental processes. This is the posture that absolutely belongs to the failure. What has brought about this? Few of the children are allowed to crawl; babies are not allowed to get on all fours and push the shoulders back. An abnormal curve of the back also results. Our children are propped up and allowed to sit for over an hour, thus getting round shoulders. Later the children have unsuitable clothing and bad food.

Then in regard to the feet, in these groups that we have examined, Dr. Rucker recalled the fact that in one large industrial establishment examined with other a thousand women, four pairs of good feet were found. The primitive child went barefooted and used his feet and his toes. Children today are rarely allowed to go barefooted. They are put into stockings too short and then they are put into shoes and they have no chance to use the muscles of the feet. In this country many of our Jewish and negro babies are born flat-footed. With proper exercises and building up of the shape when he begins to wear shoes, by the time he is four or four and a half he has a perfect foot.

Again we have the questions of overdressing, under-bathing, and under-exercise. Sometimes we examine an individual and she has good posture, good heart and lungs, pretty decent teeth (they have been filled and x-rayed and several taken out for pus pockets, etc.) and there is very little wrong with her. Then we test her muscles.

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[1] Only papers of direct interest to physicians are herewith included in abstract.

She has no muscle strength; she has taken no exercise. There is no such thing as physical health without mental health. We are suffering from lack of education. The popular form of education has not taught the individual to react to his environment normally. It has taught him to be insincere, to try to be not himself. We are here to see what plans we can work out. Our great desire is to make people fit to live and make life fit to be lived.

DISCUSSION.

DR. CHRISTINE MURRELL, London.—I would like to know whether they have done in the United States what we are beginning to attempt in England, and that is to get a constructive life history of the young people from the time they are born right up to school age? We have our infant clinics which are much less complete than yours, and we start in as soon as we possibly can. Then we have them at the clinics between the ages of two and five years, and we pass on the information from one place to another. When the child goes to the elementary school we pass this information along with him. We did this at first because we found that three authorities were examining the children and none knew what the other had already discovered. At the end of school, I am sorry to say, this ceases, and nothing is being done at present for the people in industry. I gather from what Dr. Rucker says that some of your large industrial establishments have employees examined. That, so far, we are not doing in England. In that you are ahead of us. In a few years we hope to have the consecutive life history of all the boys and girls up to the age of fourteen. We are hoping that our Government will soon make the school leaving age sixteen and then we will have the life history over two extra years, and extremely important years. Although medical inspection is very usual in the schools to which the richer children go, it is not obligatory, but practically takes the whole nation.

DR. ELLEN C. POTTER, Philadelphia.—In answer to the question whether we have anywhere in this country a consecutive physical history of the children: In our school inspection in the City of Philadelphia we fail to recognize the infants, but we take them up as they enter school, and there is a card which follows the child through the grades with a record of the physical defects. If the children go to high school the grade card follows them there and they have a very much more elaborate physical examination and are followed through the four years of their high school course. Grammar school children are not able to get a working certificate unless all their correctable physical defects are corrected up to the age of sixteen.

DR. MARY E. CRAWFORD, Winnipeg, Manitoba.—I have done a good deal of examining both for the Young Women's Christian Association and in our schools, and I have always told the girls to whom I have lectured that once they are satisfied that their physical condition is good normally, to forget about it absolutely. Our physical processes are unconscious and meant to be so. I find that the more some of our girls think about their physical condition the more they have imaginary maladies, and it is not desirable that these types, at any rate, should have their attention directed too much to their physical processes.

Dr. Constance Long, London.—It seems to me that there is a tremendous value in physical examinations, but it is very difficult to make them practical. In our country we do not like to be constantly interfered with, and that is rather the way people would look at it if we had regular examinations for normal people. However, it is possible that something might be devised that would fill the need. As for the people who think themselves ill, they might be helped by the routine examination by a wise doctor who could convince them, that they are not sick.

Dr. Eleanor Bertine, New York.—I think perhaps in the discussion we are confusing a regular examination with compulsory examination. To encourage the principle of asking each individual to realize the value of a regular examination and go for it voluntarily is quite a different thing from demanding by law that the individual have the physical examination.

Dr. Estelle Bertine, New York City, delivered an address entitled

EVOLUTION OF THE OUTDOOR WOMAN.

It is possible to educate the growing girl to love exercise and outdoor sport, and to appreciate their value from the health standpoint. The great problem is what to do with the women already grown who had no opportunity for exercise and, what is worse, do not want the opportunity, but on the contrary choose to be inactive. To the growing girl exercise means recreation and enjoyment, but to the adult woman it means exertion and is a burden. We frequently find that after a girl has been going to work for a couple of years she gets to a point where she tires easily and when she has finished her day's work she has no inclination to take physical exercise but prefers to go to bed or to take recreation in some form that requires no effort on her part. In order to get these girls interested in exercise, we have found at our health center that the physical examination is the most effective means of making an appeal. We have found that the girls will come for a physical examination when they will not attend a gymnastic class of their own volition. Usually they come for a physical examination because some doctor has aroused their interest by telling them what they might be and are not. In examining these girls we find many who have no physical defect but simply have no muscle and no endurance.

I wish to cite one instance of what we have found exercise will do for a girl. In this instance the girl was employed in a large department store. Physical examination showed that she was rundown and had undeveloped muscles. She complained that at each monthly period she suffered so much pain that she had to go to the hospital, and she had gone so often that she was ashamed to present herself. She began to take systematic physical exercise and from that time she says she has not had the slightest pain or trouble at her menstrual periods. The principle involved is that she was not only benefited physically, but she had her mental viewpoint changed.

Why are our physical education departments not reaching more office and industrial girls? First, because the appeal to take exercise is not made from the recreational standpoint. Often the girl rather fears a physical examination. She may, however, easily be convinced that a physical examination is a desirable thing and she may submit to an examination because she thinks there is something wrong with her. Through this examination we may be able to induce her to enter the gymnastic class, and then the object should be to evolve an out-of-door woman. There is a latent love of motor·activity in every girl even if it has been conventionalized and weakened. We have found that a hike, camping out over night, and cooking out-of-doors has been an effective means of arousing enthusiasm for out-of-door life. A hike offers many opportunities, if conducted under the direction of tactful leader, of bringing home many lessons in hygiene, such as the advantages of sensible shoes and comfortable clothing. It is surprising how fast the inactive girl develops into an out-of-door woman when once she is started, and it is equally surprising to observe how much out-of-door life adds to the efficiency and enjoyment of life of these girls.

Dr. Kristine Mann.—To meet modern conditions among women we need a new type of doctor, one who can supervise large groups of people, as in large industries where we have large groups of normal men and women who do not need medical care, but who do require health supervision. The same is true of college girls. Much of the usual medical training is not necessary for the work of the health doctor; on the other hand, medical training omits much that the health doctor should know. A combination of the training of a doctor and that of a physical educator is most desirable. We have with us some eight or ten women who have first been physical educators and then have studied medicine. Dr. Ferguson is one of these.

Dr. Agnes Burns Ferguson, Pittsburgh, spoke on

THE PROBLEM OF EXERCISE IN CITIES.

She stated that as physicians we talk a great deal about the benefits of exercise, yet few of us practice this teaching. Formal exercise, such as setting-up exercises are useful, but they have by no means the value of exercises that are actively recreational in form. The game is the best type of exercise, because it provides mental relaxation as well as physical exercise. In her work in connection with training camp activities she travelled widely through the South and West and asked people in various walks of life this question "How much time do you give to active recreation?" She received all sorts of answers, from the look that implied that the question was the fruit of an unbalanced mind to the reply that the individual interrogated had not thought about the matter at all. Only one or two, here and there, acknowledged that they had given over a portion of each day to active recreation. Head workers seem to have the idea that active exercise is not necessary, and when a rush period comes this is the first thing to be given up. We have become too willing to allow others to furnish our recreation for us. There are two types of recreation, organized and commercialized, and possibly a third type, the unorganized. For the child and adolescent the latter type is apt to be vicious and dangerous. Cities are often willing to furnish playgrounds, but unwilling to furnish proper supervision which is very essential. Chicago, Philadelphia, Boston and Pittsburgh have really very finely organized systems of recreation but that are by no means adequate to the needs of the population. Those interested in recreational centers in Chicago believe that there should be such a center every one-half mile in order to bring the facilities within reach of all. In our large cities we should have a recreation center every quarter of a mile or as conveniently located as are our public schools. While we have been failing to provide sufficient recreation centers commercialized recreations have stepped in and provided such a variety of amusements that practically every moral make-up and every pocketbook can be suited. The commercialized amusements are all passive except dancing and many of them are injurious. We want active recreation. We need an increased consciousness of muscle and less consciousness of nerve. Not a boy or girl should finish grammar school without a knowledge of tennis, golf and volley ball; the reason these are specified is that they can be continued in adult life. I feel that certain types of mental cases, the morose, borderline cases, are such because they have not been vigorous playing children and young people. Many of these cases can be saved through motor activity, and on the positive side motor activity develops alertness, agility, and accuracy. A survey of the records of college men in one institution, covering a period of twenty-six years, showed that the men who excelled in games and sports were uniformly vigorous and successful. Their success is attributed to the loyalty, coöperation and team work; they learned to be good losers and good fighters always and they carried these qualities over into adult life. A study of delinquency court records shows that the number of delinquents has been remarkably diminished where playgrounds are numerous. The war has done more than anything else to show the real value of recreation and has been of immense value in creating and sustaining the morale of the soldier. Now four million men who have learned to appreciate recreational activities have been returned to their communities with a greater stimulus to physical exercise. We have proved to the world that recreation was one of the saving graces in maintaining our army morale. If recreation was important in the emergency of war it is also an important part of the life of every community in times of peace. We ought to realize what a contribution recreational exercise may be to a people, physically, morally, and spiritually. We have been accustomed to think of health as applying only to the physical side of life, but we must learn to think of it as applying to the mental, moral, and spiritual side of life. If our cities spent more on recreational facilities they would have to spend far less on their police departments. The church is awake to the need of play and is endeavoring to provide for this need. The movement to shorten working hours is bringing to the foreground the problem of what use is to be made of leisure time. During the war many cities recognized the advantages of publishing bulletins as a guide to proper recreations for the soldiers and sailors. It is equally important now that we make proper provision of the employment of leisure time. We may well ask ourselves the following questions: What is my country doing for the leisure of its people? Do we have enough recreation centers? Is my country doing what it should in the supervision of commercial amusements? What is the community doing for mixed groups of young people, and what is being done to utilize recreational facilities already at hand.

Dr. Martya Regina Stang, Christiana, Norway.—I have learned to-day that you in America are doing much for recreation. In Norway Nature has provided many things for our use. We have the snow and the hills which give plenty of opportunity for outdoor recreation without any expense. I am sorry to say that the girls do not practise skating, coasting and skeeing, to the same extent that the boys do. These sports, however, keep the children of Norway in very good condition. The girls when young frequently excell in these sports but they do not continue to practise them when they grow up. It is the practice of the teachers in Norway to take the children to the coast for swimming and the same is true of other large towns. Dress is really at the foundation of this question of exercise; a girl cannot partake in sports if she wears a dress that is unsuitable and if it is the fashion to wear clothing that is unsuitable we cannot make the girls give it up.

Dr. Alma Sundquist, Stockholm, Sweden.—The circumstances in Sweden are very similar to those of Norway. We have the hills and the ice and we do not have as large cities as you have so that it is easier for the people to get out of the city. The schools of Sweden are well provided for physical training. Every school has its gymnasium. Most young people know how to skate, skee, swim, and dance, and there are some playgrounds for baseball and tennis. There is very great danger in our country as in every other that the taste for passive recreations will supplant that for active recreation, and I am glad stress has been laid on this point. It is a good thing to alter public opinion on this point.

Dr. Ferguson.—It does not seem that we as physicians are sufficiently interested in active recreations. In my seven years' connection with recreational centers I can recall only two instances when physicians came to the center. I am glad Dr. Stang and Dr. Sundquist spoke as they have, for they have shown that they know what is being done in the way of physical education in their countries, while I think that in America very few physicians know what is being done.

Dr. Angiola Borrino, Italy.—In Italy there is great activity in physical education, but it is confined chiefly to the upper classes.

When grown the girls cease to take an interest in active exercise. The working girls say that they do not have the leisure time for these things. In Italy the girls in the normal schools frequently ask to be excused from gymnastic exercises and they consult their family physician on the question. He tells them the gymnastics tire them because they are not accustomed to them and not because the exercise is harmful and encourages them to continue it. In Italy the physician stands as the confident and advisor of the family quite as much as for the medical service itself.

Dr. J. Anna Norris, Minneapolis Minn., read a paper entitled

COLLEGE A POTENTIAL LABORATORY FOR DEVELOPING EXERCISE IDEALS.

Even with the best ideals the college girl often finds exercise and out-door life crowded out of her program, and this is not always due to the pressure of study but often because the girl adds social service work, sorority work, etc., to her program. Many high schools give little attention to physical training and instruction in healthful living and the girl when she comes to college does not make a reservation for physical training on her program unless the curriculum requires it. Our colleges differ greatly in their requirements in this respect, the curricula providing for anywhere from one to four years, the only consistent thing being a four year requirement. At the University of Minnesota we have required two years physical training, but an increasingly large number of students elect to come back for the third and fourth year as they recognize the advantages of the training and that it fits them to be more useful in social service work and as instructors in physical training. A thorough physical examination, including urine and blood examination, health consultations and lectures on hygiene are features of the program. A students athletic association makes a more powerful appeal to the student to take part in recreational exercise than an appeal made by the faculty. We excuse our girls from gymnastic work on the first two days of menstruation, but encourage them to come and do light work on the third and fourth days. In arranging the schedules for the students physical education should be accorded a place at the same time that other branches of study are provided for and not left until later to be fitted in if possible.

Dr. E. V. MacCullom, Baltimore, read a paper entitled,

VITAMINS.

The speaker described the progress made during the last ten years in the study of nutrition. There have been a number of laboratories in this country which have contributed, notably those of Dr. Osborne and Dr. Mendel at Yale. About 1907 we became aware through the studies of Dr. Hopkins at Cambridge University, England, that even though a diet contained a sufficient amount of protein, of carbohydrates, such as starch and sugars, of fats, and certain mineral salts, it was not complete and that laboratory animals confined to a diet of such substances in their pure form would live no longer than if allowed to fast. It has long been known that scurvy and beri-beri were deficiency diseases; through our experiments it has been found that there is a third state of malnutrition, which results from the lack of a certain unknown chemical substance present in certain fats, particularly butter fat, egg yolk, and intracellular fats from the liver, kidney, and other glandular organs of animals. At the present time it is universally accepted by students of nutrition that in addition to those constituents of the diet which have long been known, we require three chemically unidentified substances. When one of these is lacking from the diet, which is otherwise satisfactory, scurvy will result; when another of these subtances is lacking, beri-beri will result, and polyneuritis will develop. When the diet is lacking in the third one of these substances, a third deficiency disease will develop, which was first definitely observed in 1912 or 1913. In this condition the eyes become edematous and inflamed. The onset is very sudden. The eyeball becomes inflamed, the cornea clouded, and within ten days to two weeks, in many cases, but not all, the eyeball will perforate and the contents be extruded. In laboratory animals, when the eyes are so swollen that they cannot be opened, if we introduce 2 per cent. of butter fat or egg yolk or glandular intercellular fat, and make no other change in the diet, the condition of the eyes begins at once to improve, and within ten days or two weeks they return to normal. Bloch of Copenhagen has reported sixty such cases in his practice in children fed exclusively on skim milk, skimmed with a centrifugal separator. When these children were fed on milk and cream mixtures or whole milk, the condition of the eyes rapidly came back to normal.

In the light of what we now know, diets made up exclusively of cereals, such as wheat, oats, barley, rye, corn or maize, rice, together with tubers, such as the potato, radish, turnip or beet, and meats derived from the muscle tissue of animals—round steak, porterhouse steak, ham, roast—all these foods can be combined in any proportion, and they fail to properly nourish a young animal. An experimental animal of the omnivorous type brought up on such a diet will always remain undersized, and furthermore its reproductive capacity will be low, and the infant mortality in such animals is very high. In addition, such animals age early, their span of life being only a third to a half that of normal animals.

There are three types of diets which we have found satisfactory for the nutrition of animals. One of these is the strictly carnivorous diet, including the blood and glandular organs of animals. Such a diet is successful in the laboratory and the lion, tiger, Esquimo and American Indian subsisted on such a diet. A second type of diet which succeeds in laboratory animals is made up of cereals, tubers, and muscle cuts of meat, together with liberal amounts of leafy portion of plants, the latter having dietary properties which we did not suspect until a few years ago. They make good the deficiencies of cereals, tubers and the muscle cuts of meats. The third type of diet which succeeds is made up of cereals, tubers, and the muscle cuts of meats with milk in fairly liberal quantities.

Owing to modern methods of milling, large groups of people are living on decorticated and degerminated cereals, together with a tuber and meat diet. They continue to buy meat in spite of its high price because it appeals to the taste and they are not using enough of green leafy vegetables. It is people fed on this type of diet that furnish the very high mortality from tuberculosis, though doubtless other factors enter in. We have greatly overrated the importance of poor hygienic surroundings and greatly underrated the importance of faulty diet, as predisposing causes of tuberculosis. This type of diet is also a large factor in causing malnutrition among school children. Some months ago Dr. McCullom had the opportunity to carry out an investigation in a large institution for orphans. On examining these children it was found that they were very much undersized, and they had a distressing mortality from tuberculosis year after year. Yet the hygienic conditions were little short of ideal, and the children were well cared for. Through a private gift of money Dr. McCullom was able to supply a quart of milk a day to each of a group constituting one-half of all those between the ages of four and eight years. There were 41 children in this group. A similar group of 41 children were fed by the institution as best it could. The change in the condition of the group to which we add a quart of milk a day to their diet has been little short of phenomenal. The children in this institution have enough to eat but they have been restricted to a cereal and meat diet.

Data secured by insurance companies show that during the past thirty years the diseases commonly referred to as old age diseases are rapidly on the increase. The explanation offered is that modern industrial life is too strenuous and individuals break down under it. I believe there is another interpretation to be put upon the facts. Coincident with the increased incidence of these old age diseases, we have had profound changes in our food supply. We do not eat liberally of the leafy vegetables as do the oriental and tropical peoples, but restrict our diet to the muscle cuts of meats, degerminated and decorticated cereal products, and the locally grown potato or sweet potato. I believe that this type of diet which failed so signally in our experimental work with animals, fails likewise in human nutrition. Dr. Joseph Goldberger has added extremely interesting confirmation of this view in his study of the etiology of pellagra in the South. One of the most striking features of his investigation is that in those families where the diet was restricted to cereals and tubers and meat, there was a high incidence of pellagra. Where they use no milk pellagra is high. Where they use most milk it is lowest. It occurs in inverse ratio to the use of what we have come to term the protective foods, milk, eggs, and the leafy vegetables.

Dr. Graham Lusk, New York, read a paper entitled

NATIONAL FOOD ECONOMICS.

The war brought with it a great educational propaganda as to the nature of food and Dr. Lusk thought it would be desirable to present in this paper the most recent conceptions as to the food necessities of a people. The war has taught us how an intelligent state may protect its citizens from famine. Before the war questions of the science of nutrition were generally considered to be of academic interest only. Large numbers of people were in a state of chronic undernutrition, although a certain few were evidently the product of over-eating. At the outbreak of the war the food requirements for children were generally underestimated.

The interallied Scientific Food Commission, at its meeting in Paris in March, 1918, fixed the probable requirements of food for individuals of different ages as follows: At six years, 1500 calories for both boys and girls, at ten years, boys require 2500 and girls 2100; adult men require 3000 and adult women 2500 calories daily˙ Farmers, soldiers, and men engaged in heavy labor require more than 3000 calories per day. The Inter-Allied Food Commission, in the early summer of 1918, voted as follows: "It is not desirable to fix a minimal meat ration in view of the fact that no absolute physiological need exists for meat, since the proteins of meat can be replaced by proteins of animal origin, such as those contained in milk, cheese, and eggs, as well as proteins of vegetable origin. On the other hand, the commission resolved to fix a desirable minimal ration of fat—75 grams (2⅔ oz.) per average man per day. The ration is to be made up of fats of vegetable and fats of animal origin. If the amount of fat of vegetable origin is insufficient for this purpose, it may be necessary to maintain a stock of animals to furnish this fat." All fats have the important property of a slower discharge from the stomach and a slower absorption in the intestine than have sugars and starches. On this account a mixed diet "stays by" one for a longer time than if a diet free from fat be taken. Then it is also necessary that the diet contain fat soluble and water soluble vitamins. Milk contains both the fat soluble and the water soluble vitamines and contains also proteins of value for the growth of the young and for the preservation of the adult.

Facts to be particularly brought out are: 1. The high importance of the dairy farm. 2. The importance of fruit culture. 3. The importance of fresh vegetables. A modern state ought therefore to protect the welfare of its citizens through directive arrangements which shall assure to all a diet that is properly composed.

Bread is the staff of life. From five bushels of wheat the American family can obtain 44 per cent. of its food requirements. It is obvious that upon the price obtained by the farmer for wheat, by the miller for flour and the wheat offal which he resells to the farmer, may depend the cost of nearly half the necessities of life. A family of five should not buy meat until it has bought three quarts of milk; this is exclusive of the milk required to make butter or cheese. Studies of the food supply of the average American family show a cost of food for a family of five of $16 per week, which would imply a family income of at least $40 a week, or approximately $7.20 a day for an eight-hour day for the working man. If the father's income be less than this there are three alternatives: (1) to cut the quantity of meat ordered; (2) to have the mother engage in remunerative employment, or (3) to spend for food out of a rational proportion to the total family income. In the dietary of the typical American family the aggregate cost of animals products, such as meat, fish, eggs, milk, cheese, butter and lard, reaches 69 per cent. of the total amount paid for food, though these products contain only 38 per cent. of the total calories required. On the contrary, bread, sugar, potatoes, fruit, and nuts, representing 62 per cent. of the fuel value of the food for the human machine, are purchasable for 31 per cent. of the total cost of food. Beef, which contains 17 per cent. of the total calories costs 42 per cent. of the total sum expended. Such a dietary is not a poor man's dietary. Readjustment of the materials forming the American dietary so that the quantity of meat taken would be one-third less (five pounds per week instead of fifteen) would bring the New York price of food taken by a family of five from $16 to $10. This would correspond to a wage scale even at present prices of $4.50 a day. Under conditions which maintain high wages no cheap food can be produced, and the period of cheap food, if inaugurated, would be short lived and would mean certain disaster to the country. At the present time, with the income and inheritance taxes in operation, the disparity between our present system and the socialization on an equal basis of financial resources would scarcely yield more than a 10 per cent. increase in wages, which is all that they would obtain from an overthrow of our present social system. The difficulties presented by these economic problems are many and great. There should be some kind of national food control. There should be some representative office for the consumer established in Washington under scientific control, because it is really a scientific question and not a haphazard question. Dr. Longworthy of the Department of Agriculture has suggested to me that it would be wise to establish a Department of Social Welfare in Washington, which would take in the Children's Bureau and this food question. Such a step would be, in my judgment, for the welfare of the community.

Dr. Clelia D. Mosher, Palo Alto, Cal., read a paper entitled

STRENGTH AND ENDURANCE.

Is it not possible that at least some of women's physical disqualifications have been owing to surrounding conditions rather than inherent in her sex? Dr. Mosher agreed with Professor Meyer of Stanford University in his statement that "we cannot make a man into a woman nor a woman into a man." Moreover we do not even wish to try to do so. But we may make a judicial examination of woman's traditional handicaps in the light of scientific knowledge. Indeed we must do this, since a large portion of the best manhood in the warring nations has been exterminated, and since women have been of necessity forced to undergo the strain of unparalleled labor which they are traditionally unfit to bear; in this situation the need for truth with regard to woman's physical limitation becomes imperative.

In 1892 every test on physiology still taught that women breathed costally and men abdominally. In 1894, it was demonstrated that there is no sexual difference in the type of respiration. Dr. Mosher's experimental work demonstrated that pregnancy interferes less with respiration than has generally been believed. Diaphragmatic respiration persists as late as the eighth and even the beginning of the ninth month of pregnancy. The movements of the diaphragm materially aid in the expulsion of the bile from the common duct. We may have here one of the factors in the production of gallstones which are of more frequent occurrence in women than in men, another undesirable result of the unnecessary costal type of breathing. Strong abdominal muscles are essential to a good figure, they aid in the second stage of labor, are the chief support of the kidneys and abdominal organs, and are very potent factors in preventing menstrual pain and excessive flow.

If we analyze the serious objections to women in industry and the plans for their care and protection, we inevitably come to the one function, menstruation, whether this is put in words or not. My statements in regard to the function of menstruation are based on a study of more than 1907 women during 12,000 menstrual periods and on work in physiologic and hygiene laboratories during twenty-five years. The painful menstruation so commonly observed is, in the larger number of cases, congestive in type and is produced by: (1) the upright position; (2) alteration of the normal type of respiration by disuse of the diaphragm and of the abdominal muscles; (3) lack of general muscular development; (4) inactivity during the menstrual period; (5) pyschic influences. All these factors combine to develop and promote excessive pelvic congestion.

Dr. Mosher claimed that menstruation represents, not a "supplemental wave of nutrition" (Mary Putnam Jacobi) but rather a waste of potential energy in the form of blood which might be used in productive work when not required for the development of the embryo. No physiologic purpose is served by an excessive congestion of the uterus and adnexa so frequently found in women. No possible harm can come from bringing about by physiologic method a better circulation of the blood through the generative organs. At present all the evidence points to the menstrual hemorrhage as a secondary matter more or less fixed by the upright position. It is unnecessary and undesirable that it should be of more than brief duration or of more than slight amount. The following exercise was found most effective for this purpose and it has given equally happy results in the hands of others. All tight clothing having been removed, the woman is placed on her back, with knees flexed and arms at the sides to secure perfect relaxation. One hand is allowed to rest on the abdominal wall without exerting any pressure. The woman is then directed to see how high she can raise the hand by lifting the abdominal wall without straining, then to see how far the hand will be lowered by the voluntary contractions of the abdominal muscles, the importance of this contraction being especially emphasized. This exercise is repeated ten times night and morning in a well ventilated room. The woman should be cautioned against jerky movements. These exercises should be taken every day in the month including the time of menstruation.

The periodic raising of the local blood pressure during menstruation and lowering of the general blood pressure has been grossly exaggerated in the woman by her physical inactivity and by her constricting dress and unhealthful habits. Under normal conditions there should be no more women suffering with disorders of the generative organs than with disturbances of the digestion, respiration, or heart.

The first step in the physical regeneration of women is to alter their habits of mind in regard to bodily functions. They now accept periodic disability as inevitable. The terms "sick time" and "unwell" for the function of menstruation and the mental acceptance of disability are so firmly fixed in traditional thinking that it is difficult to get a woman to even try to be well, however simple the method of relief offered her. The same false ideas prevail regarding the climacteric. Much of the trouble at this time is due (1) to a nervous letting go of the woman's self-control and acceptance of the inevitable incapacity; (2) to her muscular inactivity; (3) to social and family changes as much as to physical causes. A woman at this age is usually confronted with a loss of her usual occupations; her family is grown, the period of financial stress and effort in helping to build up the family fortunes is over, and if she has had intellectual interests she has dropped them. At the same time her attention is directed unduly to her physical discomforts. Her condition is analogous to that of an active man who stops business in middle life.

The tables shown by Dr. Mosher presented the results of tests of strength and endurance in groups of athletic men and of college women. They show that there is no difference in the muscular strength of women and men which is due to sex as such. The differences which are frequently found are due to the differences in the use of the muscles, brought about by conventional limitations of activity or dress. A woman who has had a normal development should be able to do any work that a man of the same size and weight may profitably do. Our study has also shown that a high degree of muscular power in the woman in no way lessens her racial efficiency, and that a lack of muscular power, as in the pectoral muscles, is a distinct racial disability. Under favorable conditions feminine handicaps would seem to be reduced to the loss of time necessary for the bearing of children. So the problem would seem to be not to minimize feminine handicaps, but to dispose of them altogether. We must go back to the Greek ideal of physical perfection. With the present generation we may have to compromise because with them the idea of incapacity and limitation is so firmly fixed. We can bring up the girl children of to-day physically and mentally free, clothe them so they will not be hampered in time or work, and there is no limitation in what we can expect from the coming generation. Let us keep firmly in mind that we are not to servilly imitate man, but to make ourselves more perfect women, fulfilling our own great place in the world. Let us not make the mistake of losing sight of woman's primal function, motherhood.

DISCUSSION.

DR. REGINE STRANG, Norway.—I agree in the main with what Dr. Mosher has said. I understood her to say that the use of the brasier caused mammæ pendentes. I do not think this is always the case for I have seen this condition where it was not caused by the brasier and probably represents a special type.

DR. THUIELER-LANDRY, France.—With regard to the endurance of women, in France it was noticed that women worked as hard as the men, but little by little they became exhausted.

DR. MARGUERITE GIBOULOT, Paris, France.—It is true that there is a difference between the sexes due to lack of training. But there is a deeper difference due to internal secretions. Women who worked in a factory during the war are now exhausted and some had to stop; otherwise they became tuberculous. There is a difference between a man who is not trained and a woman who is not trained, a deep difference which makes the struggle of life more difficult for the woman.

DR. CHRISTINE MURRELL, London, Eng.—I should like to suggest that the sex difference which has to be admitted, due to internal secretion, is one dealing with the emotional and not with the intellectual nor necessarily with the muscular condition of women.

DR. ALMA SUNDQUIST, Stockholm, Sweden.—The question about sex differences is a very difficult one; upon that point we can perhaps all agree. It is a question that cannot be solved in a discussion like this. I think we can all agree upon the fact that for the present the young girls need much more physical training than they are getting and that the muscular condition of the young girls of the present generation is not what it should be. We need more physical training and a better muscular condition.

DR. MOON.—I agree with Dr. Mosher that girls should not be incapacitated at the menstrual time. I want her to tell us if at Leland Stanford it is the custom to excuse the girls from the gymnasium floor for the first two days of menstruation.

DR. CLELIA D. MOSHER.—I am sorry I gave the impression that a brasier properly worn might not be necessary sometimes. I was simply speaking of the normal breast and the way the average girl wears her brasier. She puts it on so that she drags the breast down in her effort to conceal it, and I wished to call attention that in its normal position the breast is inconspicuous.

With regard to the question of fatigue in women workers, as compared with men, I was referring to college girls. Dr. Martin and a committee have studied groups of industrial men, which I am not at liberty to refer to at this time, but I may say that fatigue is not a question of sex. It is no wonder that the woman who has had no physical training and no activity, and who is improperly clothed, so far as physical freedom is concerned, who takes up this heavy work without preparation, is fatigued, and a man in the same physical condition would have the same result.

With regard to the changes in the woman who has had an ovariotomy, it seems to me I have heard of changes in the male after castration. I have records of a large number of women who distinguished themselves during the menopause and afterward and the ovaries are not secreting after the menopause.

As to the emotional conditions, we are taught constantly that the development of the big muscle groups helps to stabilize the nervous systems of people, whether they are men or women, and may not also the question of celibacy enter into the question of the instability of women?

Dr. Ellen C. Potter, Philadelphia, spoke on

MENSTRUAL DIFFICULTIES.

We humans are creatures of superstition and tradition. Within the memory of practically all of us the individual who had tuberculosis was thought absolutely certain to pass it down to his children and the individual who suffered from tuberculosis was doomed. We recognize what a tremendous amount of public and private funds have gone into great educational campaigns to demonstrate that that was not true. Those of us who have a vision of woman emancipated from physical and mental handicaps have before us a fight against superstition and tradition which is even greater than the fight against tuberculosis.

Menstruation is a physiological function and we have the right to expect from a physiological function that it shall either be performed without consciousness to the individual or that if its performance is conscious, that it shall be accompanied by at least a sense of satisfaction, if not real pleasure.

Throwing out of consideration those cases of dysmenorrhea and difficult establishment which have their origin in embryonal faults, and which are the province of the surgeon, we find the following. There is first the girl who has tremendous difficulty in the establishment of her flow, lasting over a period of months, which results in a mental attitude toward the whole function of menstruation which is deplorable. If we look over such a girl, we find her small, slight, emotional, and if by chance a pelvic examination is made (but mark you I do not approve of the pelvic examination of girls because of the emotional and mental disturbance) we find a uterus which is slightly infantile in type, indurated, and not equal to the task which is about to be imposed upon it. We find another type of girl whose flow has its onset with absolutely no announcement, who flows on, and on, and on, interminably. At first there is no mental disturbance, but ultimately there is considerable mental disturbance and depression. These two types of cases have at their backs the same cause and practically the same method of prevention. In both of them there has been a lack of proper hygiene, proper physical exercise, and proper attempt at development of the girl's whole physique.

If, however, the girl has not received this training, we can start in with the exercises which Dr. Mosher has described. We have to recognize that there is a possibility in these girls of a sufficient amount of stimulating internal secretions, and it is possible to supplement those by the use of ovarian extract, or extract of corpus luteum. In the case of prolonged flow we may have recourse to pituitrin, or any other preparation of the pituitary body.

What should be the hygiene of a girl, the period having been established either with difficulty or normally? If she has been accustomed to taking cold baths, the cold baths may be continued throughout the menstrual period. If she has been accustomed to exercise in the gymnasium or out of it, that exercise need not be interfered with. I have been tempted to make an exception to that rule but I find I cannot do it. This I am saying in regard to the girl who is normal, and is toned up and in good physical condition. If in the development of the flow we find that a girl of nervous temperament, which she has because of lack of development of the large muscle groups, we should give her the benefit of relief from her usual work by taking off of her the strain of intellectual accomplishment even to the extent of taking her out of her school work for a year, but during that year devoting ourselves to her physical make-up. The hygiene of the bowels and bladder need to be emphasized in connection with the girl's menstrual hygiene.

There is undoubtedly a type of dysmenorrhea which we may class as a psychoneurosis. There has been established a faulty psychic habit that manifests itself periodically by misinterpretation and exaggeration of the sensations of the menstrual period. In a case of that kind physical therapy and mental suggestion are indicated. These form in my belief the largest proportion of cases suffering from dysmenorrhea. We have in addition a symptomatic group due to mechanical causes: these belong to the field of the surgeon. The congestive is absolutely amenable to proper hygiene and training, particularly during the period before the establishment of the flow. In backward displacement we have the knee-chest position always available for an effort at correction for the disabilities due to that form of dysmenorrhea.

There should be no disturbance of menstrual functions at the time of menopause, if a woman has lived a life of exercise and hygiene and good training as she should have done in her premenstrual days. I agree with Dr. Mosher that a woman has not arrived at a complete expression of herself unless she has become a wife and mother, and with the correction of faulty hygiene and lack of exercise and muscle training in the early days, she may secure for herself that complete expression of herself as wife and mother.

DISCUSSION.

Dr. Eliza Mosher, Brooklyn.—I wish to take exception to the statement that it is not best to examine young girls—I mean the pelvic condition of young girls. I agree that an examination *per vaginam* is not good, but I do not agree that an examination per rectum is not good. I believe it is as necessary for us to know the kind of uterus that a young girl has as it is to know what kind of a uterus the woman who is going to have a child has. This we can settle in one moment by a rectal examination.

In the second place I cannot agree that a cold bath may be taken by the person who is in the habit of taking one. I have known instances in one of our women's colleges where young women accustomed to cold baths have been injured by taking them during the menstrual period.

I also disagree with reference to replacing a retroverted uterus by the knee-chest position. Thirty years ago I threw out the knee-chest position. Why? Because the vaginal wall is the best support of the uterus, and because anything that stretches the fibrous tissue of the vaginal wall is going to weaken it as a support of the uterus, and the knee-chest position cannot be used without straining the vaginal wall.

I believe that the development of the abdominal wall, as has been said, is the great need for preventing dysmenorrhea, but I believe we should add the yawn exercise which empties the chest and therefore allows the uterus to rise.

Dr. Louis Isachen, Christiana, Norway.—One thing we must not do and that is to give young girls alcoholics and narcotics. The every-day man practitioner does not have much interest in dysmenorrhea, and they are likely to give a little strychnine, morphine, or belladonna and tell the patient to take a glass of cognac. These girls who have been given narcotics when they finally reach the gynecologists have broken nerves and you cannot help them. Where we have the real type of dysmenorrhea, not helped by physical training, the dilating treatment is helpful, but we must do a thorough dilatation.

Mrs. Irene Osgood Andrews, New York, read a paper entitled

WORK AND MATERNITY.

The speaker stated that her only excuse for appearing was her connection with the maternity center work of New York City and a keen interest in maternity protection. She only attempted to bring together some of the conclusions reached by eminent authorities concerning the effect of the industrial work of mothers upon the mortality of their children and the quality of their parenthood.

Sir George Newman, in studying the effect of industrial employment upon the mother and child during pregnancy and through the first few weeks of life, finds that statistical returns do not entirely support the assertion that factory employment of women is the main cause of high infant mortality. He brings out the fact that prematurity is more often a cause of infant death in districts where there are no factories than where there are. He also points out that in Preston and Blackburn, the employment of women has been declining since 1891, but the infant mortality has been increasing. This does not, however, amount to a blanket endorsement of the employment of women, because he calls attention to three serious disadvantages, namely, the ordinary diseases and injuries to which women and girls in factories are liable, the strain and stress of long hours, and the absence from home of the mother of the infant. Experts are in practical agreement that the "advantages in better food, lessening of financial worry and change of environment resulting from industrial employment outside the home, if carried on under normal healthy conditions, far outweigh any disadvantages in the majority of cases." One report concludes that "judging by all the tests to which we have put 934 cases, there is practically nothing to choose in the quality of maternity between those who go out to work and those who stay at home."

In the United States by far the most thorough and scientific investigations into the subject have been made by the Children's Bureau of the National Government. They found practically always a higher death-rate among babies whose mothers were industrially employed away from home before the birth of the child. In the Manchester, N. H. study, the death-rate of babies of employed mothers was 227.5 while for the babies of mothers not gainfully employed the rate was only 133.9. But the Bureau points out that the working mother is so often found in families where the husband earns but little that it becomes difficult to distinguish between the effects of the mother's employment and the generally bad living conditions associated with low income families.

In regard to stillbirths, miscarriages, and abortions, such figures as exist seem to indicate a higher rate for women industrially employed outside the home. Here again the findings are not conclusive.

We have established about ten or twelve maternity centers in various sections of New York City, and have handled to date between fourteen and fifteen thousand cases, all prenatal. The records are elaborate, almost too elaborate, but when we analyze these records we will have information such as does not exist anywhere and on a basis which must be quite conclusive.

Coming to the employment of the mother away from home after the birth of the child, it is quite commonly accepted that while normal work in itself may not be injurious, the absence of the mother from home does produce a situation which undoubtedly increases the infant mortality rates. Some fifteen or twenty countries have given legal expression to this belief by the enactment of laws which prohibit the industrial employment of women for a few weeks before and for several weeks after confinement. It is regrettable that some of these countries, including four states in our own United States, have prohibited women from working, but have not made any provision to supplement the family income at that critical time. It is for that reason that we here are extremely anxious to secure some form of health insurance which will include maternity insurance for these mothers.

The Children's Bureau in the Manchester study found that the mortality rate for babies of mothers who stayed at home was 122, while for babies whose mothers worked away from home following their birth it was 312.9. From the studies of the Bureau it would appear that the additional money brought into the family by the mother's work did not offset the evil effects of her absence. It will probably not be disputed that the baby stands a better chance of survival if the mother remains at home, at least for the early months of life.

In the writer's opinion all nations should establish some system of financial assistance as the time of childbirth, either in the form of maternity insurance equal to the wages earned and given directly to the mother or as a state endowment which will be of substantial assistance. Some provision should also be made to meet increasing expenses as the number of children increases, and as the expense of rearing children increases.

There is great need of establishing more widely nursery schools for the care of babies and runabouts, where mothers may leave them for a few hours each day. Can you imagine the strain upon the health of the mother who has the constant care day and night, of three or four children, if not six, seven or eight?

DISCUSSION.

DR. DAGNY BANG, Norway.—In Norway women are not permitted to engage in industrial work for some weeks before and after childbirth and we have made provision for an economic recompense, which is equivalent to about two-thirds of their earnings.

MADAME LOESCHI, Italy.—In Italy we have a maternity insurance which has been approved by the Chamber of Deputies.

A DELEGATE.—In France we have had a law for the last two years under which the State is taking care of mothers. They are paid three francs a day for a month before and a month after birth.

DR. BONNET, Italy.—In Italy the mothers must stay at home for a month before and a month after confinement, and they receive a small sum. The workers pay a little toward this but it is mostly provided by the State. .This is a new law and the sum will be increased later.

DR. IDA KAHN, China.—We are just beginning the introduction of the industrial system. We have observed so far that while the conditions of women working in the factories seem to be very onerous, as a matter of fact the children of those women are better and stronger than the children of women who are not working, which bears out the statement that the speaker made, namely, that the financial assistance of the wages of mothers makes all the difference in the welfare of the child. We have noticed in the factories where they allow the babies to be brought in and nursed every two or three hours, or once in the morning, at the noon hour, and once during the afternoon,that there is a very great difference in the health of the children, and it is gradually being enacted not by law but by custom that this is the way to do in employing women.

Dr. Alice Armand Ugon, Montevideo, Uruguay.—There are no laws affecting the employment of women in my country because there is no great industrial development. Generally the man works and pays for everything needed in the family. Occasionally young girls go into factories. So I may say that in Uruguay we have an ideal condition.

Dr. Ransom, Boston.—I have two suggestions to make in reference to the training of mothers. We have in Boston, on Sunday afternoons, at the Harvard Medical School and the Boston University, lectures for the instruction of the general public. These lectures are extremely well attended. They include talks on the care of children, physiology, on nursing, and on other subjects upon which mothers should be informed. I think this plan should be extended to the stores and factories where there are doctors, whether these doctors are men or women. The plan carried on at the Harvard Medical School should be extended to our other Universities. The mothers can get away on Sunday afternoons and the course of study may be extended over several hours.

Dr. Henry L. K. Shaw, Albany, read a paper entitled

SPECIAL FACTORS IN MANAGEMENT FAVORING NORMAL DEVELOPMENT FOR THE CHILD.

We must lay special stress on healthy parenthood in producing a strong and vigorous race. Every child has a right to parents mentally, normally, and physically strong. We should remember that "Like begets like" and "Whatsoever a man soweth that shall he also reap."

At a convention in London a few years ago, John Burns, President of the Local Government Board of England, made the following statement in speaking on this subject. "In order to improve the race the parents should be cleanly wed, the children nobly bred, wisely said, and firmly led." That the crux of the whole matter. We must consider therefore the subject of eugenics.

A very large percentage of infant mortality is preventable. In New York State, in 1880, the infant mortality rate was 286; in 1902 it was 168; in 1911, 120; in 1913, 102; in 1918, it was 92 per one thousand living births, that was in New York State outside of New York City. These results are not accidental or attributable to any one cause or factor but to certain influences not in operation twenty or thirty years ago. People have come to recognize more and more that a high infant death rate is not to be regarded as the decree of Providence but is the result of ignorance, weakness, and cupidity.

There are now two branches of pediatrics. The older branch has confined itself to the diagnosis and treatment of disease while the newer branch has interested itself in preventive pediatrics, or what we may call special preventive pediatrics. We should not attach exaggerated importance to one and forget the other. It has been well said "The cure of disease is splendid, but the prevention of disease is Godlike." We should give attention early to the minor defects of the child while they are still amenable to treatment and before serious danger has been done. The value of the regular physical examination should be emphasized. The merchant takes account of his stock, makes an inventory and balances his books. Why should not a child be entitled to a regular inventory and a balance of its physical capital to see that it is not on the road to physical bankruptcy? If that had been done twenty years ago 39 per cent. of the men registered by the draft would not have been found with defects.

Dr. Shaw stated that he examined the curriculum of at least a dozen of our medical colleges and found that no provision is made for teaching this branch of medicine, namely preventative pediatrics. At the last meeting of the American Pediatric Society resolutions were passed appointing a committee to prepare a syllabus for the teaching of sociologic pediatric medicine and to use every effort to get such a course introduced into our medical colleges. Such a course would include a course in vital statistics as concerned with birth registration and infant mortality and morbidity; prenatal work, such as that conducted in New York and Boston; prevention of infant mortality; examination and supervision of children of pre-school age; school inspection, including the care of under-nourished children; sanitation of schools; dental clinics; care and education of the blind, deaf and dumb. In this field the medical profession has not yet realized its opportunities for service and for the fulfillment of its highest ideals. The social welfare worker, by our indifference, has been allowed to grasp the work and all the credit. This is work that should appeal to women physicians.

At the request of Dr. Biggs, Dr. Shaw, Health Commissioner of New York State, prepared a comprehensive program for child welfare work applicable to a city of 25,000 or more which makes provision for antenatal and maternity work, infant welfare work, supervision of children of pre-school age, inspection of school children, care of all dental defects and defects of sight and hearing; care of the blind, deaf and dumb; supervision of children in hospitals, the regulation of milk supply, providing that it shall be under rigid inspection from the dairy to the home; the instruction of the mothers at the schools, and through literature and the public press, housing conditions and factory conditions, etc. Under this scheme physicians are to be paid as well as nurses, social service workers, and other employees. The plan provides for one full-time physician at $3500 a year and an assistant at $2800. The entire expenditure to a city with a population of 25,000 would be $15,000.

Dr. Shaw presented the revised "Minimum Standards of Child Welfare," submitted by the Washington Child Welfare Conference of May last. The delegates to this conference visited a number of cities throughout the country and held conferences to consider these standards and we now have them revised. The speaker hoped that the Conference would adopt resolutions endorsing these standards.

Another factor in the development of the child is that of proper health instruction in the schools. This is important for the children carry this instruction home and the parents benefit by it. We should have a revised curriculum for health instruction in our public schools, one revised through the coöperation of a committee of physicians and teachers of hygiene.

Nutrition is one of the factors relating to the development of the normal child. The normal child is a properly nourished child. Various agencies have coöperated to teach health habits and to secure adequate health examinations (we prefer this term to the expression physical examination). Emphasis is being placed on the fact that proper development and nutrition is a question of the relation of weight to height and not of weight to age. Malnutrition may be an accompaniment of disease but it is often due to faulty health habits, insufficient sleep, lack of exercise and fresh air, improper feeding, etc. In an orphan asylum in this State we compared weights and heights and found little malnutrition, as the discipline of the institution compelled the children to practice health habits. On the other hand it happens too often that the child in the wealthy or well-to-do home is not compelled to conform with the rules of health. One of the most effective means of dealing with malnutrition is by means of nutritional classes like those first started by Dr. Emerson of Boston. In addition to the supervision and advice that the children get in these classes there is the advantage of competition.

The average American family has become smaller fortunately and children relatively rarer and more precious and therefore a higher responsibility to the physician.

DISCUSSION.

Dr. Augusta Rucker, New York.—Some one has said when you come to New York you are asked "how much money have you?" When you go South, you are asked "Who are you?" and when you go West you are asked "What can you do?" I wish to tell you what they do for the health of children in Iowa. In Iowa they raise the finest chickens, the finest hogs, and the finest babies. If you visit their State Fair you will find that they learn there not only how to select the fine points in live stock but in babies as well. The largest building on their fair grounds is the Women's and Children's Building and it draws the biggest crowds to see the babies weighed and examined. The people learn when the examination is being conducted properly. One man, I recall, took a first prize for his hogs but was told his baby was a runt. He asked for instruction and, said he would bring a winning two and a half year older the next year and he did. This is one of the great educational things they have in Iowa.

Dr. Agnes May Hopkins, Texas.—In Texas we are doing the same thing. I have seen mothers bring in their babies to have them examined and when they were told they were not up to the standard they asked for instructions and the following years their babies would grade 100 per cent.

With regard to the work in France, I organized the American Red Cross work in the Mediterranean provinces in France. The people became very much interested in the work, gave contributions, and wanted it continued. This the Red Cross is doing. We paid particular attention to the mothers and young French girls did the home visiting. In France we found them well equipped to care for sick babies, but they did not have visiting nurses or social workers going into the homes and instructing mothers.

Dr. Esther Lovejoy, Washington, D. C.—I was in France with the Red Cross, and I wish to say that they have one social center in a suburb of Paris that was established fifteen years ago and this has been doing welfare work for several years. The American Women's Hospitals and the American Red Cross have now subsidized that place. The point I wish to make is that there are places in France where this kind of welfare work is being carried on.

Dr. Frances S. Johnson, Edinburgh, Scotland.—I wish to report on the work for the last five or six years in Edinburgh. We have organized under the Local Government Board and the city authorities seven health centers, each officered by a physician, a nurse, and a social welfare worker. These work in coöperation with a committee of voluntary health workers who in this way get their training as social workers. The number of children at each center varies from 300 to 1000. I want to emphasize how keen we are to bring this work in close association with the medical student, not only the women, but the men medical students. We have at present between four and five hundred women medical students in Edinburgh. We have organized a plan by which they can all familiarize themselves with the work of these centers. We have succeeded in bringing this work in close relation with the university and the medical student.

Dr. Yvonne Pousin, Paris, France.—This work is being carried on in France, but we did not have the visiting nurse until 1912. In the beginning it was very difficult, but the American Red Cross has waked us up and put us on our feet and we cannot thank you enough for this.

Dr. Shaw.—I feel that we owe a great debt to France for she first gave us the consultations de nourissons and the first prenatal work. In 1914, there were in this country only twelve cities carrying on infant welfare work while in France there were at that time 400 or 500 cities doing such work. New Zealand has done great things in child welfare work and has had woman suffrage for many years; now that we have woman suffrage in this country we may expect great things here.

Anna L. Burdick read a paper entitled

HEALTH AND INDUSTRIAL PLACEMENT.

Figures in regard to the number of women in industries are not available. A ten year old census shows that there were at that time 8,000,000 in gainful occupations. Of these 32 per cent. were in domestic or personal service; 22 per cent. in agriculture; 22 per cent. in mechanical and manufacturing pursuits; 15 per cent. in sedentary occupations, and 8 per cent. in professional work. We must cease to look upon women workers as a labor reserve to be turned off and on as occasion requires and with as little nonchalance as we turn off or on the electric light.

Workmen's compensation has been an advantage in that it has caused employers and the public to look into the conditions of the worker.

We have little scientific data which will give a basis for a constructive program of health for the working woman. During the war in Government offices 30 days a year was allowed off for sickness and 30 days for vacation. The result of this plan has balanced so badly for women workers that all must suffer for the shortcomings thus brought to light. These results show the need of integrity of workers, physical, mental, ethical and spiritual.

In sixteen states girls between fourteen and sixteen years of age who work during the day must go to school at night. In studying women workers we have separated them into groups. The first group between fourteen and sixteen years. This investigation showed that matrimony was becoming less and less an interruption of the wage earner's career. Many married between the ages of 16 and 22 and the mother during this period was something of a problem, the great difficult at this age is to make these women desire the health instruction they need. In the group between the ages of 21 and 24 years, one out of every four women in New York is employed and one out of every four employed women is married. The percentage of married women who are employed is increasing. Health and education cannot be dropped out at any point along the line from the cradle to the grave.

After considerable discussion on the subject of the adjustment of work to the strength of the worker the following resolutions were adopted by a majority vote:

"A method should be found of adjusting work, under proper hygienic conditions, to the strength of the worker without reference to sex. There would then be no reason why the power of women should not be used without endangering the racial efficiency."

Dr. Frederic S. Lee read a paper entitled

INDUSTRIAL FATIGUE.

One of the vital factors in the vexing problem of labor is greater knowledge of the ways in which the human being in the factory works. While mechanical engineers and industrial managers have been keen to perfect the iron, steel and brass machines of the factory and to learn how they must be used most efficiently, the study to the human mechanism had been strangely neglected before the war. The war gave an unexampled opportunity and stimulus to such study. Valuable contributions have been made in England by the Health of Munition Workers Committee and the Industrial Fatigue Research

Board, and in the United States by the Public Health Service. Similar investigation is now being organized in Canada, and it is probable that a fourth center for research will be instituted in France. The work is being conducted by scientific men and is gradually discovering and making known the conditions of the highest efficiency of the factory worker.

In the matter of hours and output, there is a constantly increasing body of reliable evidence pointing to the conclusion that in factory operations in which the physiological, as contrasted with the machine, factor is pronounced, reduction of the working period within limits either does not diminish or actually increases the daily production. While such evidence seems to point toward the eight-hour day as approximating the optimum, it is probable that from the standpoint of maximum production and continued maintenance of working power, eight hours will be found too long for certain kinds of work and too short for others. In other words, the proper length of the working period will be determined largely by the nature of the work. Now that the universal eight-hour day seems to be in process of achievement and with Lord Leverhulme and the miners advocating a day of six hours, the need of exact inquiry is still further evident.

Light is thrown upon the conditions of high production by a study of the curves of production during the day. In most factory operations there is a gradual increase in output during the first spell, the "practice effect," and the maximum is not reached until the second, third or fourth hour. From the maximum there is a gradual fall, probably largely due to fatigue, with a partial recovery soon after luncheon, and the minimum output occurs usually during the last hour of the days work. In night work the fall in production during the last two hours, at least in the very common twelve-hour night, is enormous, and is accompanied by slowing of manipulation and sleeping of the workers. When fatigue during the working period becomes pronounced, means ought to be discovered of lessening it. Paradoxical as it may seem, this probably can be done while at the same time maintaining or increasing the total output. Shortening the working period will frequently do it. Introducing recess periods during the working spell often proves helpful in the same direction. A five-hour continuous working spell unbroken by rest periods is probably always too long for the best results.

Overtime is inadvisable, as is also Sunday work following a week's labor. Excessive heat tends to impair strength and reduce production. Accidents to workers, which are caused by fatigue, inexperience and other factors, and many of which are preventable, are a grave source of inefficiency, as is also the lack of adequate and suitable food. A high labor turnover, while expensive, is also incompatible with high production. The very common limitation of work on the part of workers to a point far below their physiological capacity means a low production. The problem of women as compared with men in industry is not a problem of their greater or less general efficiency, but is rather to be solved by discovering what types of work each set is best fitted for.

By such studies as these there is being founded a science of industrial physiology. This science endeavors to discover what the worker is fitted for, what he is capable of, and under what conditions he can do his best without exhaustion or other physical detriment. It endeavors to learn and point out to the employer rational methods of securing a high production. It conduces to the advantage of both employer and worker and offers ground for the recognition of the identity of their interests. What is now needed is an extension of scientific investigation, the education of industrial managers and workers, and the sympathetic coöperation of those persons who can aid financially in extending and establishing the new order.

DISCUSSION.

MISS JANE ADAMS, Chicago.—We have much to learn on the psychological as well as the physiological side of the labor problem. The connection between fatigue and lowered moral resistance has not yet been fully worked out, but there is an appalling connection between them. The moral wreckage among women reduced to a state of exhaustion and physical depletion, where there is little physical resistance, is very great. This leads us to a consideration of the overworked mother, who has a stimulus in the affection of her family which the unmarried industrial worker does not have, but even she fails nervously and becomes cross and irritable.

DR. JANET CAMPBELL, England.—In an examination of 2500 women factory workers during the war, we found 42 per cent. of them suffering from marked fatigue or ill health. This would seem to indicate that for the emergency women were undertaking work for which they were not physically fit. Muscular tests showed that the total strength of women workers measured in pounds, averaged considerably less than that of men workers. The question is not one of greater or less industrial efficiency of women but of finding the industrial work for which women are fitted. I do not think woman is fitted for all varieties of industrial work.

In a symposium entitled

HEALTH EDUCATION

DR. LILIAN WELSH, Baltimore, read a paper entitled

HEALTH EDUCATION IN COLLEGES AND SCHOOLS.

A review of the life and letters of Elizabeth Blackwell, Mary Putnam Jacobi, and other women physicians showed that medical women have long recognized the importance of preventive medicine, It is likewise true that women have a special adaptability for preventive medicine. Medicine has three great aims: (1) to cure disease; (2) to prevent disease and to promote health, and (3) to enable a man or a woman to do scientific research to increase our knowledge of life processes and thus indirectly contribute to the cure or prevention of disease and the promotion of health. Women doctors have thought too insistently on medicine and surgery, overlooking many new principles in preventive medicine, which is now becoming highly specialized.

Under Dr. Welsh's direction courses in health education have been carefully worked out. Physical examinations have served as a basis for a part of the instruction and every effort is made to fix in the mind of the student that all instruction in this department is part of the plan to keep well.

On account of its fundamental importance to the welfare of the individual, the family, and the race, every girl is entitled in the progress of her school education to receive adequate health instruction adapted to her age, and her intelligence. As the college supplies teachers for the normal schools and high schools and as the normal and high schools supply teachers for the secondary and elementary schools, the time has come to demand from colleges adequate courses in hygiene and public health. Classes are also needed for the special training of women public health workers. The college should have a department of health coördinate with other departments, and so organized as to provide for health instruction, health supervision, and health investigation, each administered so as to emphasize its educational value. Such courses should not be given as parts of courses in biology, sociology, domestic economy, or home economics, nor yet of physical training. There is at hand a body of knowledge derived from scientific research and investigation embodying generalizations having the greatest significance for the conservation of the health of the individual, the family, and the community. For the proper utilization of this knowledge we must have trained teachers to teach hygiene and physical education. They must be trained as efficiently as teachers are now trained to teach mathematics, biology, or history. The demand for health teachers is insistent and there is a great demand for trained women lecturers. This is a field that women physicians may make exclusively their own.

DISCUSSION.

DR. AGNES HOPKINS, Texas.—In reviewing the history of education we find that education first began with the training of monks and the training was for monastic life. Later others shared this training and finally it was taken over by the universities, but it still remained a training suited to monastic life, consisting in history, mathematics, languages. To-day we need a system of education which teaches us to live, yet in the entire college curriculum there is no course that helps us to be better citizens and to live. I would like to know whether any one knows of colleges that give courses in health education that have sent out questionnaires to ascertain the effect of such a course. In an institution in my State we did this after having given the course for four years. As a result of this inquiry we found that there had not been one infant death among the children of our alumnæ. We think that proves that such a course is worth while. We have had discussions as to how to prevent infant mortality and I do not think it has been mentioned that this is one way by which the infant death-rate may be lowered. We should have in our colleges some required course to prepare us for the duties we are bound to have.

DR. HELEN MACMURCHY, Toronto, Canada.—I wish to recall the pioneer work of Ellen Richards in home economics and to suggest the advisability of an alliance among three or four bodies, all professional, namely, home economics, teaching bodies, and medical bodies, and I should like some one to make practical suggestions as to how it can be brought about.

I think we should draw up resolutions calling attention to the importance of health education to be sent to the Journal of the American Medical Association, the British Medical Journal and the official publication of the French Medical Association. We women physicians ought to take the responsibility of the health of our students, and I would like to put myself on record as supporting Dr. Welsh.

DR. IRA S. WILE, New York read a paper entitled

HEALTH CLASSES FOR CHILDREN.

Health is wholeness and soundness, a state of being in which all natural functions are fully exercised without consciousness of any of them. Health carries with it ideas of alertness, energy, self-reliance, muscular coördination, imagination, curiosity, concentration, persistence, initiative, responsibility and self control; power and willingness to think and act, and even to be cheerful and courteous. It embraces physical, mental and moral potential productivity.

Preventive medicine seeks to shift its emphasis from the individual to the mass. The mass, however, consists of individuals. What advances the health of the individual favors the health of the family, and what advances the health of families leavens the health possibilities of the group.

Localized health agencies for children of school age, including medical inspection of schools, school nurses, drafting of adequate educational laws, the formation of little mothers' leagues are in a way types of health classes. To these may be added an increased stress upon the hygiene of teaching and the teaching of hygiene in public schools, although it is doubtful if these functions are performed as satisfactorily as might be desired.

The general purpose of health classes is the accentuation of correct rules for living and also for the discovery of defects and handicaps. Health classes teach unity of body, mind and soul, and place in proper perspective their relation to the welfare not merely of the individual child but of the entire family taken as a unit and in this way we approach all problems relating to the child in from a single center. This requires an understanding of medical psychology, and of social and economic problems which are so thoroughly interwoven in the development of healthy and healthful family life. There is such a thing as a healthy character and its formation should not be neglected in the ordinary methods of conducting health classes. Dr. Wile believed in the single unit health class and that segregation should not be permitted to develop. If a child in the health class requires the care of a dentist, he is sent to the dentist and returns to his class; in the same way, if a child is undernourished or has some other trouble that needs special attention he should have it, but he should return to the general health class.

At Mount Sinai Hospital health classes are conducted working through the family as the unit. They work for health education without instilling fear of any of the diseases that may attack childhood. Work is not done through the stimulation of fear, for fear is practically an anxiety state and woefully bad psychologically and also a pretty low motive from which to act. It is evident that the purpose of such a class must be to improve the family standards of living, to eliminate the two great curses, ignorance and poverty. In the matter of administration provision is made for a thorough physical examination, the keeping of complete records and follow-up work. In the keeping of the records and the follow up work the services of a nurse and a social worker are used and there is also work for a certain number of volunteer aids. There is also a field for a domestic science expert and a psychologist. The physician makes the physical examination, but does not, as a rule, prescribe. Directions to the patient or to the nurse must be given in detail, for instance, not the general direction, to take exercise, but definite instructions as to the kind of exercise. We have three kinds of cards, blue, yellow and white. The patient on admission gets the blue card and as he progresses is advanced to the classes designated by yellow and white cards. Such a system of cards is some little trouble but it arouses competition and has been found effective.

The discipline in the classes is not formal. The room where the patients wait is very different from the ordinary morbid dispensary room. The walls are hung with charts, teaching food values, the proper kind of wearing apparel, methods of making a fireless cooker, or an ice box at home, etc. The patients are not compelled to be silent but are encouraged to talk, especially on health matters. Everything in the environment and in the attitude of the personnel is directed to creating a joyous and healthful atmosphere.

In conclusion Dr. Wile summarized health classes for children as an expression of humanized medicine, seeking through medical psychology, educational, social and economic means to build up generations of children who shall be a credit to themselves, their families and their nations. They shall be powerful, but self-controlled; mentally alert and without indolence; spirited but spiritual; capable of living in fullest measure, a life that shall be rich to enrich their communities in all that accrues from health which is wealth and happiness.

(To be Continued)

BOOK REVIEWS.

THE PERITONEUM. By ARTHUR E. HERTZLER, M.D., F. A. C. S., Surgeon to the Halstead Hospital, Halstead, Kansas; Associate Professor of Surgery, University of Kansas; Formerly Professor of Pathology, Experimental Surgery, and Gynecology, University Medical College, Kansas City, Mo. C. V. Mosby Company, St. Louis, Mo., 1919. Two Volumes.

This praiseworthy contribution to American medical literature presents the results of the author's researches and studies extending through a long period of years and having been carried on in conjunction with an active surgical career, the practical viewpoint is naturally predominant. The work is in two volumes, the first of which deals with the more abstract problems, the second with the practical aspects. A résumé of the contents is of interest. After a full consideration of our knowledge of the physiology, histology, development and anatomy of the peritoneum, Dr. Hertzler discusses the nature and genesis of peritoneal adhesions and their prevention, changes in the circulation and inflammatory reaction. In each chapter the text is supplemented by the necessary illustrations and a most complete bibliography. The extent of the latter shows moreover how much attention has been devoted to research and observation in this important structure. The author has carefully gone over the leading features of the topics noted, supplemented by his own observations. He shows how necessary a knowledge of peritoneal development is to a proper understanding by the surgeon of the topographic relations of the viscera and their mesenteries and omenta. In considering the gross anatomy of the peritoneum Dr. Hertzler draws attention to its sac-like formation which closely resembles the skin, the individual being thus disposed between a cutaneous and a serous sac, both of these being folded about irregularities of surface, outside and inside. The extent of peritoneal surface is generally accepted as coextensive with that of the surface of the body. In order to determine the accuracy of this notion the author measured a series of twenty autopsy subjects and found an average peritoneal surface of 3268 square inches as compared with an average cutaneous surface of 3436 square inches. The chapter on gross anatomy is particularly interesting and instructive because of the practical references to surgical procedures. Thus it is shown that the perivesical space is important as an avenue of approach to the terminal ureter and the depths of the pelvis. By separating the peritoneum from the side of the bladder and the anterior pelvic wall, deep abscesses can be reached and drained extraperitoneally, especially in young females in whom vaginal drainage is objectionable. That broad ligament abscesses may elevate the peritoneum and point in the region of the pubic eminence has been noted sufficiently often, but that this favorable circumstance for drainage may be anticipated seems to have been overlooked.

Peritoneal fossæ are amazingly complicated and although the author carefully describes not less than nine, a facile imagination is required for their perception. In his description of the external topography of the abdomen, Hertzler dismisses the arbitrary division into quadrangles, which totally disregards the relation of abdominal contents. For this he substitutes a series of triangles radiating from the umbilicus and thus include important organs and symptom points.

In an excellent chapter on wound healing, the processes taking place in the injured peritoneum are detailed as the author has studied them in the abdominal cavities of mammalia. The advantage of such a method is that we deal with an exclusive mesenchymal tissue in a region where it is possible to exclude bacterial infection and also allows a study of the process of repair separate from the reaction of inflammation. Heretofore this has not been attained. The literature of the subject bears the impress of the period when the healing of infected wounds alone was studied. Chemical factors especially as present in damaged, devitalized tissues have not received adequate recognition. Ideal healing can only take place when no foreign substances are present, either bacteria or dead tissues. The formation of fibrous tissue is generally regarded as the *sine qua non* of successful wound healing. One theory is that the fibres form within the protoplasm of the cell and are later extruded from it, the other that the fibers form in the intercellular substance from substances produced by the cell. To these Dr. Hertzler adds his own theory according to which fibrin fibrils form an amorphous exudate and are transformed into connective-tissue fibrils. He has devoted a great deal of time to this study which must be read in the original for proper understanding of his contentions.

A complete description of the nature and genesis of peritoneal adhesions together with a chapter on their prevention, follows. The importance of circulatory changes including anemia, hyperemia and varicosities is shown in connection with productive processes and a discussion of the inflammatory reactions brings the first volume to a close.

The second volume of Dr. Hertzler's work deals with the diseases of the peritoneum, including classification, etiology, pathogenesis, symptomatology, diagnosis and treatment. The peritoneal lesions accompanying appendicitis and cholecystitis, the pneumococcus and bacillus tuberculosis, etc., and finally tumors of this structure are all treated in a very comprehensive and satisfactory manner. This volume is characterized by the same careful preparation as the other and the illustrations deserving of equal attention for their originality and appropriateness.

Dr. Hertzler has shown commendable industry and patience in presenting in a practical form the accumulated knowledge of this important anatomical structure as regards its lesions and abnormalities, both from the theoretical and practical standpoints. A permanent and well deserved place will undoubtedly be found for this work in medical text-book literature as soon as its value has become more generally known and appreciated.

THE PITUITARY.—A Study of the Morphology, Physiology, Pathology and Surgical Treatment of the Pituitary, together with an Account of the Therapeutical Uses of the Extracts made from this Organ. By W. Blair Bell. William Wood & Company, New York, N. Y., 1919.

In this volume Dr. Bell presents in a monographic form a very complete résumé of our present knowledge with regard to the pituitary body. The clinician rather than the morphologist and physiologist is addressed, owing to the commanding position which this organ now occupies in medicine, surgery and gynecology. Dr. Bell has long been associated with research undertaken to establish the relationship of the pituitary gland to the female genital functions. It was found, however, that no comprehensive study could be made without first obtaining an intimate knowledge of the morphology and the pathology of the organ in question. This study resulted in the collection of a great deal of material which constitutes the subject matter of this volume. Unfortunately much of the information on hand is contradictory. At the present time we are in need of a critical study of the accuracy of the facts thus far obtained and Dr. Bell truly states that it is more essential to make an attempt to correlate this knowledge than to present a mere string of disconnected statements.

The first portion of the book is given over to a detailed description of the morphology of the pituitary body, including its development and comparative anatomy. The second part is concerned with the physiology of this organ which has been subjected by the author to very complete physiological as well as pathophysiological methods of investigation. Attention is repeatedly called to the necessity of completeness in such investigations. For instance, in external experiments we must not be satisfied with observing whether the animal dies or survives; we must learn, if possible, the actual effect of the experiment on the correlated organs and structures and on the metabolism generally. Unfortunately this completeness of investigation is rarely possible to the ordinary investigator for he is not usually an expert in surgery, histology, chemistry and general medicine. Nor, on the other hand, is the pure physiologist sufficiently acquainted with the technic of surgery and with the possible applications of his results to medical and surgical practice. This shows the necessity of combining the results of many workers, each of whom is a specialist in his own sphere of action and who may be able to work together under one roof. A complete description of the experimental work on the pituitary body follows, including the interesting work done by the author in various operative experiments on animals and the human subject. Dr. Bell frankly states that he cannot present a definite and lucid exposition of the interrelationship between the pituitary and the rest of the hormonopoietic system or of the exact dependence which each has on the secretion of the rest. The information thus far at hand is too fragmentary and unsatisfactory, still Dr. Bell believes that in the near future further experimental work will put us in position to describe such relationship with comparative certainty. Too little attention seems to have been paid to these secretory organs which do not readily yield so-called physiologically active secretions —that is, active extracts which will produce an immediate physiological effect. In this we have been hampered by technical and experimental difficulties such as are encountered in the removal of certain parts of organs, for example, the suprarenal cortex. The author indicates that there are two other lines of investigation, one physiological and the other pathological. We require more information in regard to the activation of the so-called inactive organs—in other words, we must identify the hormones. It is probable that the secretions of these so-called inactive organs are active enough when combined with or stimulated by one or other of the internal secretions. In seeking to discover the reason for the uncertainty of action of the ovarian extract, Dr. Bell found that this preparation is much more active when thyroid extract is administered at the same time. In the second line of investigation it is necessary to make careful histological examinations of the whole hormonopoietic system in all cases of disease of one or more members of the series. Although many deaths occur yearly from this lesion there exists thus far no study of importance from the pathological point of view.

The third part of the book is taken up with a description of the disorders associated with the pituitary and their treatment. This is a field in which marvellous results have been obtained but yet great care must be exercised in the interpretation of the same. Our knowledge concerning the undoubted correlation between the pituitary and the other hormonopoietic organs is still imperfect. This lack of comprehension often prevents our knowing whether certain symptoms are due to primary pituitary disease or to associated changes in some other of the organs of internal secretion. In place of the classification proposed by Cushing, who ascribes all conditions of perverted pituitary function to dyspituitarisms and subdivides these into clinical groups, Bell believes that it is better from the scientific point of view to consider pituitary lesions as primary and as secondary to disease in the neighborhood, and also in each case according to whether there is a condition of excess of secretion or deficiency, in so far as this can be estimated.

The domain of the gynecologist and obstetrician is invaded by disturbances of this gland, although apparently so far removed from his sphere of action. Thus the skeletal and other changes associated with acromegaly, which is the most common of these disturbances, influences the conformation of the pelvic and other bones of women, and we likewise find gynecological symptoms including amenorrhea. The toxemias of pregnancy demand attention from this view point, although no clear knowledge has thus far been adduced of coincidental changes in the hormonopoietic organs. Alterations in the gland have been encountered in eclampsia and

Dr. Bell refers to the abnormal number of basophils and a considerable eosinophilia. There may also be an extensive invasion of the pars nervosa by the cells of the pars intermedia. The paucity of large neutrophil cells in eclampsia indicates, according to the author, a lower degree of activity than is normal while invasion of the pars nervosa may lead to an excessive production of infundibulin.

In the discussion of the treatment of pituitary lesions the author believes that medicinal methods are only indicated to relieve certain metabolic and distant phenomena, and that they are of little value when there are local symptoms, such as headache and visual disturbances, which require relief by surgical procedures. The latter he describes in detail, including preparation, method of approach, etc. The therapeutical uses of pituitary extract are discussed in the concluding portion of the book. Dr. Bell uses the term "infundibulin" in preference for the extract prepared from the pars posterior. The indications for the administration of pituitary extracts may be divided into the following categories, according to the requirements of the case, although sometimes more than one action is indicated, especially when antagonistic metabolic effects are required. In other words the extract may be given for (*A*) pressor effects on the circulatory system, the uterus, alimentary tract, the urinary system and spleen; (*B*) for supplementary effects where a deficiency of the gland occurs; and (*C*) for antagonistic metabolic effects, as in hyperthyroidism, osteomalacia, and other conditions of imperfect calcium retention of the tissues. In the first class of cases considerable value attaches to the injection of infundibulin in shock and collapse, care being taken not to repeat the dose prematurely. Its value is rather in the presence of a general vasomotor paresis than in sudden failure of the heart action. In the latter case it should only be given in very small doses intravenously in saline. Dr. Bell recommends the intramuscular injection of 0.5 c.c. twice daily during the acute stages of sepsis as well as in typhoid fever for the raising of the depressed blood pressure. The extract is also claimed to be of value in menopausal flushings as a vasomotor tonic given orally combined with calcium lactate; in spasmodic asthma, as well as chronic asthenic conditions with lowered blood pressure the tonic effect of the extract of the posterior lobe is most beneficial.

The obstetrical uses of pituitrin have perhaps received more attention than others. For the induction of labor Bell suggests the preliminary treatment for three days before bougies are inserted, giving 1 c.c. of infundibulin (20 per cent.) intramuscularly at night and in the morning. He believes, moreover, that this administration sensitizes the uterus to such an extent that the slightest stimulus will bring about contractions. The author also suggests the oral administration of the dried extract of the posterior lobe or the whole gland in cases of suspected uterine inertia before labor. (We are uncertain of the advisability of the former procedure, especially in view of the size of the dose and the uncertainty of the nomenclature as applied to commercial preparations. We trust that at some future time the author will elaborate this point.) The usual and well-known contraindications to the obstetrical employment of pituitrin are fully detailed.

The value of pituitary extracts in menorrhagia is pointed out, especially in cases of puberty or the menopause in which a decreased muscular tone in the uterus is present. Here the extract should be given during menstruation only and calcium lactate prescribed during the intervals. In his description of the therapeutic uses of pituitary extract, especially as applied to the remaining indications, the author admits that much of this is entirely empirical, if not purely speculative and that at the present day our knowledge is only laid on sure foundations in regard to the value of the preparation in shock, uterine atony and intestinal paresis, which was the title of his first clinical paper on the subject.

Dr. Bell's book is to be regarded as a valuable addition to our reference works on this subject, considered particularly from the general rather than any special point of view. The author has devoted a great deal of time and thought to the elucidation of the problems connected with disturbances of the pituitary gland and if his final recommendations are not more favorable and sanguine this may be ascribed to an earnest effort not to exaggerate and to base conclusions on actual evidence rather than on hope.

REPORT OF THE NINTH ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY, NOW THE AMERICAN CHILD HYGIENE ASSOCIATION. Printed by the Association, Baltimore, Md., 1919.

This valuable report contains the complete transactions of the Ninth Annual Meeting of this progressive organization. One is glad to note the new and somewhat more abbreviated title, which is equally expressive and perhaps more inclusive with respect to the purposes of the Association. Part I of the volume is devoted to "Child Welfare" activities, both here and abroad, including an important paper on Child Conservation by Dr. Taliaferro Clark, in which the plans of the U. S. Public Health Service are fully discussed. The second part includes the proceedings of the sessions on Eugenics, Obstetrics and Pediatrics, with an important paper by Dr. R. W. Holmes of Chicago, on the Conservation of the Life of the Unborn and Newly Born Child. Part III is devoted to problems of war and reconstruction, nursing and social work, etc. The Association deserves the appreciation of the workers in this field for the very creditable report of its varied activities.

The following books have been received. Those of appropriate interest will be reviewed in subsequent issues.

SYMPTOMS OF VISCERAL DISEASE. A Study of the Vegetative Nervous System in its Relation to Clinical Medicine. By F. M. Pottenger, A. M., LL. D., F. A. C. P. Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat; Professor of Diseases of the Chest, College of Physicians and Surgeons, Medical Department, University of Southern California, Los Angeles, Cal. With 86 Text illustrations and 9 Color Plates. C. V. Mosby Company, St. Louis, 1919.

GERIATRICS.—A Treatise on Senile Conditions, Diseases of Advanced Life, and Care of the Aged. By M. W. Thewlis, M. D. Associate Editor, *Medical Review of Reviews*, New York City. With introductions by A. Jacobi, M. D., LL. D. and I. L. Nascher, M. D., C. V. Mosby Company, St. Louis, 1919.

THE INTERNATIONAL MEDICAL ANNUAL.—A Year Book of Treatment and Practitioner's Index. By Various Contributors. William Wood & Company, New York, 1919.

PLASTIC SURGERY.—Its Principles and Practice. By John Staige Davis, Ph. B., M. D., F. A. C. S. Instructor in Clinical Surgery, Johns Hopkins University; Assistant Visiting Surgeon, Johns Hopkins Hospital; Visiting Surgeon and Plastic Surgeon to the Union Protestant Infirmary, the Hospital for the Women of Maryland, Baltimore, Md.; Fellow of the American Surgical Association; the Southern Surgical Association, etc. With 864 Illustrations containing 1637 figures. P. Blakiston's Son & Company, Philadelphia, 1919.

RECORD OF CURRENT LITERATURE IN OBSTETRICS, GYNECOLOGY AND ALLIED SUBJECTS.

A. OBSTETRICS.

Titles marked * are abstracted in the current issue.

* The Pulmonary Form of Influenza and Gestation. Anderodias, *Revue mens. de Gyn. et d'Obst.*, 1919, xiv, 201.

*Edema and Rigidity of the Cervix during Labor. Coinaud. *Journal de Médecine et de Chirurgie Pratiques*, vol. xc, p. 567, 1919.

Two Forms of Anomalous Pregnancy, Interstitial and Angular. *Journal de Médecine et de Chirurgie Pratiques*, vol. xc, p. 561, 1919.

*Formation of Single-ovum Twins. G. L. Streeter, *Bulletin Johns Hopkins Hospital*, vol. xxx, p. 235, 1919.

*Conduct of Labor and Puerperal Sepsis. J. H. E. Brock, *Lancet*, August 16, 1919.

*Childbirth. P. A. Kane, *New York Medical Journal*, August 9, p. 243, 1919.

*Glycosuria in Pregnancy. M. H. V. Cameron, *Canadian Medical Association Journal*, vol. ix, p. 717, 1919.

*Treatment of Severe Vomitings of Early Pregnancy. F. W. Lynch, *Jour. A. M. A.*, vol. lxxiii, p. 488, 1919.

*Eclampsia: Its Prevention and Treatment. A. L. Smith, *British Medical Journal*, July 26, 1919.

*Dental Conditions at an Ante-Natal Clinic. J. W. Ballantyne, *British Medical Journal*, July 26, 1919.

Results to be Expected from Antenatal Care. E. Holland, *Lancet*, vol. cxcvii, p. 53, 1919.

*Lactose, Fat and Protein Content of Women's Milk. W. Dennis and F. B. Talbot, *American Journal Diseases of Children*, vol. xviii, p. 100, 1919.

Eye Symptoms of Toxemia of Pregnancy. F. M. Fernandez, *Vida Nueva*, vol. xi, No. 4, April, 1919, and *Revista Cubana d'Obstetricia y Ginecologia*, vol. i, No. 4, April, 1919.

Influenza Pneumonia in Parturients. E. Petersen, *Ugesk. f. Laeger*, vol. lxxxi, No. 27, July 3, 1919.

The Surgical Trend in Obstetrics. J. F. Arteaga, *Revista de Medicina y Cirugia*, vol. xxiv, No. 14, July 25, 1919.

The Campaign Against Nonindicated Abortions. Meyer-Rüegg, *Corres.-Bl. f. Schweiz. Aerzte*, vol. xlix, No. 27, July 3, 1919.

History of Obstetrics in France. P. Bar, Arch, *Mens. d'Obstet. et de Gynec.*, Series No. 1, July, 1919.

Case of Lethargic Encephalitis in Later Months of Pregnancy. O. Putnam, *Missouri State Medical Association Journal*, vol. xvi, No. 8, August, 1919.

Nature of Eclampsia. I. Obata, *Journal of Immunology*, vol. iv, No. 3, May, 1919.

Obstetric Situation in France today. T. Coffey, *California State Journal of Medicine*, vol. xvii, No. 8, August, 1919.

Influenza in the Pregnant and in Parturients. E. Hauch, *Ugesk. f. Laeger*, vol. lxxxi, No. 26, June 26, 1919.

Cesarean Section. A. Fonia, *Corres.-Bl. f. Schweiz. Aerzte*, vol. xlix, No. 25, June 21, 1919.

Intraperitoneal Rupture of Bladder During Puerperium. W. Kohlmann, *New Orleans Medical and Surgical Journal*, vol. lxxii, No. 2, August, 1919.

Obstetrics from Life Insurance Standpoint. J. F. Arteaga, *Revista Cubana d'Obstetricia y Ginecologia*, vol. i, No. 4, April, 1919.

Obstetric Surgery. E. P. Davis, AMER. JOUR. OBST., vol. lxxx, No. 2, August, 1919.

Prenatal Care. S. Garcia Marrúz, *Vida Nueva*, vol. xi, No. 4, April, 1919.

Obstetric Examination. E. Jegge, Corres.-Bl. f. Schweiz. Aerzte, vol. xlix, No. 28, July 10, 1919.

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SELECTED ABSTRACTS.

A. OBSTETRICS.

The Pulmonary Form of Influenza and Gestation.—Anderodias (*Revue mensuelle de gynécologie et d'obstetrique*, 1919, xiv, 201) concludes his article as follows: during the pandemic of 1918–19 the gravida was severely attacked, with a mortality of 34 per cent. This gravity was due to the pulmonary complications—bronchopneumonia, pulmonary congestion and bronchitis. Neither abortion, premature delivery or death of fetus in utero had any favorable effect on the prognosis. On the contrary these events seemed to give a spur to the disease. Interruption of pregnancy was observed in nearly 40 per cent. of cases and in the first six as well as the last three months. The said interruption was not due to hemorrhage, for in no case did this accident occur. The cessation of gestation was due rather to the action of the toxins on the central nervous system or uterine musculature or to death of the fetus in utero. The percentage of infants to survive was 61. Treatment consisted in general and local venesection, subcutaneous or intravenous injections of electrargol, fixation abscess and injection of camphorated oil in large dose. Induction of labor did not appear to improve the prognosis and the phenomena of labor appeared to aggravate the disease picture.

Edema and Rigidity of the Cervix During Labor.—Coinaud (*Journal de médecine et de chirurgie pratiques*, 1919, xc, 567) states that edema and secondary rigidity of the cervix are seen in contracted pelvis with the head unengaged and not supported upon the uterine orifice; in premature rupture of the membranes; in protracted labor beyond a certain limit and in annular contracture of the uterus. Of these etiological types the first named is the most common, and especially the combination of narrow pelvis with early rupture of membranes and the consequently protracted labor brings it to pass, three of the four above enumerated causal factors coexisting. The cervix becomes voluminous from the edema, which begins in the anterior lip and then involves the lateral aspects preparatory to becoming universal. The fetal head, high up, does not bear on the margins of the uterine orifice. After the persistence of the edema for a certain period the cervix becomes a hard, rigid and inextensible ring. Further dilatation is now impossible and at times the cervix tears and in rare cases comes away *en masse*. Hemorrhage now complicates the picture with considerable risk of infection. In certain cases the tear involves the lower segment of the uterus, so that rupture of the organ adds greatly to the risk. Left to itself such labor brings about fetal death with rapid putrefaction as a result of ruptured membranes. The woman, exhausted by the protracted labor, readily becomes infected. The only conditions to be excluded when confronted with this state of the cervix is cicatricial narrowing from previous operations on the cervix and syphilis of the latter, both primary and tertiary lesions being able to cause rigidity. The management is up to a certain point that of contracted pelvis and precociously ruptured membranes. After rigidity has been established the management is expectant as long as the child lives and the temperature is down. The rubber bag may be used if haste is indicated with high forceps when dilatation is complete. If there is no prospect of delivery by natural passages and conditions are favorable Cesarean section (abdominal) is indicated with the alternative of hysterectomy. With dead fetus and fever basiotripsy is required.

Two Forms of Anomalous Pregnancy, Interstitial and Angular. Vandescal (*Journal de médecine et de chirurgie pratiques*, 1919, xc, 561) gives a brief account of these conditions but without documents of any kind. Interstitial pregnancy may go to the third and even at times the fourth month without causing suspicion of other than normal gestation. More frequently, however, we find as in tubal pregnancy abdominal pain and a dark colored vaginal discharge or one frankly bloody—a metrorrhagia. If the patient is examined toward the second month there may be a suspicion of ectopic pregnancy and in suitable cases the gynecologist may even make the diagnosis of interstitial pregnancy. There is little or no softening of the cervix, and the mobility of the cervix on the corpus found in normal gestation is absent and replaced by the so-called verticalization. The corpus is enlarged and asymmetrical, for the gravid horn resembles a hernia-like offset upon it. If we study the anatomical preparations this peculiarity is very apparent but ability to recognize it during life by palpation is much affected by circumstances. The fundus is no longer horizontal and slightly convex above but is elevated on the gravid side (sign of Ruge-Simon). The asymmetry of the uterus entails an asymmetry in the position of the adnexa. A valuable sign when it can be recognized is the position of the round ligament on the outer side of the tumor. After rupture the condition of course merges into that of tubal pregnancy.

The symptoms of angular pregnancy resemble the preceding and tend to occur in a malformation which is a minimal variety of bicornate uterus. This situation of the ovum may later give place to a normal site but in the meantime certain symptoms may be elicited. Upon careful palpation a double enlargement of the uterus may sometimes be made out while the round ligament is invariably to the outer side of the tumor which represents the ovum. The double tumefaction consists of the cervix and corpus jointly as one component while the pregnant cornu represents the other. The first named is firm to the touch and the latter softened.

Formation of Single-ovum Twins.—The exact character of the mechanism by which human twins are derived from a single ovum is still unknown. G. L. Streeter (*Bull. Johns Hopk. Hosp.*, 1919, xxx, 235) has studied the Mateer ovum, a very young, well-preserved specimen containing twin embryos. The larger embryo is in the primitive-groove stage, and, judging from the best criteria we have at present, it has a development of about seventeen days. The smaller embryo consists of an amniotic vesicle 0.1 mm. in its largest internal diameter, and a yolk-vesicle (0.03 mm. internal diameter) slightly detached from it, the two being suspended in the loose mesenchyme in the region of the body-stalk of the co-twin. It is probable that under usual conditions the two embryos would be approximately of the same size, and the small size of the twin is to be accounted for by the incompleteness of the bud given off from the primary embryonic node. If the pregnancy had not terminated in this case it is probable that the larger embryo would have gone on to maturity and the smaller one would have remained stationary in the form of two minute epithelial vesicles and been entirely overlooked. The writer calls the particular attention of obstetricians to this point, for it is probable that a careful search at the placental attachment of the umbilical cord would frequently reveal the presence of similar minute epithelial vesicles, the remains of stunted twins. We might thus find that the tendency toward twinning in man is even greater than is now supposed.

Childbirth.—P. A. Kane (*N. Y. Med. Jour.*, Aug. 9, 1919, 243) states that mothers of wild animals through their instinctive and inherent knowledge have developed to the highest degree the faculty of bringing forth their young. The dark jungle is chosen for two specific reasons: even, warm temperature and darkness. The darkness of the jungle is chosen for a specific purpose. All animals are born without the power of sight. When nature imbued eyes with the power of vision, she made them to see in a surrounding environment of a green ground floor, green, dark, dense, shady trees and a blue sky. All of that condition left to us to-day is a blue sky. A child should be born in a room with a high temperature to preserve its tender body from a sudden chilling and also that the air it takes into its exceedingly delicate lungs will not do injury. It should be born in a room painted green with green shades on the windows and those kept pulled down. The room should have only one door with the windows kept closed, or if opened for ventilation should have heavy screens in the openings to stop all possibilities of a draught. The child should be kept in this room for months, no handling should be allowed except for cleanliness and feeding.

Glycosuria in Pregnancy.—In 468 cases of pregnancy, five cases of glycosuria were found by M. H. Y. Cameron (*Can. Med. Assn. Jour.*, 1919, ix, 717). In four of these the sugar was definitely identified as glucose. In the other the patient died of diabetes. The inference is obvious. The finding of a reducing sugar in urine from a pregnant patient is a serious matter. Lactosuria may be a trivial affair, but before a patient whose urine reduces copper hydroxide in a test solution is dismissed as being in no serious condition, the fullest tests should be performed to ascertain if lactosuria be the real condition or not. Where glycosuria exists, true diabetes may be about to manifest itself or may be already in existence. Such of the causes of glycosuria other than diabetes as are consequent upon pregnancy and which cease to operate once pregnancy is ended, merely require careful management until they disappear. A regulation of diet more or less strict will keep the symptom in abeyance. A careful selection of anesthetic and any means possible to lessen the shock of delivery will perhaps prevent the onset of such changes in the endocrine gland system, already strained beyond the normal, as are indicated by the glycosuria and which might result in diabetes. Should the glycosuria be controllable by diet regulation, the frequent examination of the urine may be sufficient to protect the patient during gestation. This will not, however, decide whether or not her diabetes is under control because of fetal hormones nor will it differentiate a glycosuria due to hyperalimentation or secretion of inverted lactose. The only means of arriving at definite conclusions is by estimation of sugar in the blood. In all cases in which sugar occurs early in pregnancy or persists after delivery, a test should be made in order to determine whether or not a hyperglycemia be present.

Treatment of Severe Vomitings of Early Pregnancy.—F. W. Lynch (*Jour. A. M. A.*, 1919, lxxiii, 488) says that the care of the bowels is exceedingly important and that cathartics are not usually well borne. The formation of a nervous habit of vomiting accounts for the great majority of the cases of moderate severity which develop from morning sickness. We should seek, therefore, to break this habit and to treat, at the same time, the underlying cause of hyperacidity or subacidity, in part by medicine but chiefly by a type of food which, while easy to digest, is difficult to vomit. We must not expect to secure good results unless there is absolute rest and quiet. The patient is put to bed. All food and drink by mouth is stopped until there has been no vomiting for twenty-four hours. The bowels are kept open by a daily high colonic flushing. The patient is put under the influence of large doses of bromid given by rectum, beginning with 40 to 60 grains every four hours. A solution of glucose and soda is given by rectum. These are best given in doses of 8 to 10 ounces at fixed intervals since the drip method soon causes irritation. It is exceedingly important to assure the patient that she will retain the first meal given, to explain the plan of treatment, and to warn her against vomiting when she is nauseated. It should be explained that the vomiting habit is very easy to form, but very difficult to break. The type of food at no time should include fruits or sweets. It should be given as dry as possible and the meal should be of the solid type. The hyperacidity group responds quickly to a diet of proteins, limited fats and restricted carbohydrates. The glucose by rectum supplies the deficiency of the carbohydrates, while the sodium bicarbonate is used to neutralize the acidosis. Nothing is as useful as the diet of meats, twice toasted bread with butter, and a small amount of milk and cream, to be taken as a ration, all or none. A patient should begin with at least four such meals a day. Fluids by mouth are withheld for many days and until the diet has been extended to include vegetables. Then we may give alternatively solid and fluid meals—in small amounts and at frequent intervals. Broiled steak, roast beef and slightly cooked scraped beef must constitute the standby for several days. The diet for the subacid type is far more difficult and should be more mixed with fewer meats. The bromids are now gradually reduced and soda and magnesia are given in capsules by mouth during the period of digestion. This treatment rarely fails when properly controlled in chronic cases. It should not be attempted with the fulminating type of case nor with one with black vomit or other signs of toxemia. These should be aborted without delay. Gastric lavage is seldom helpful as an adjuvant to the treatment. The method of abortion is entitled to the most serious consideration if that treatment is finally chosen. Chloroform is absolutely contraindicated in any case in which it would appear that the liver has used up most of its glycogen. Ether is objectionable, partially because of the acidosis which its use entails but chiefly because it adds to the vomiting. Local anesthesia suffices for nearly all necessary procedures. It may be augmented by nitrous oxid and oxygen in analgesic doses, never given to the anesthetic degree. The patient may have advanced so far in pregnancy that you may not remove the fetus through the dilatation obtained by Hegar catheters. Vaginal hysterotomy may then be indicated, especially if the cervix is long and high. We must keep in mind the possibility of infection since the resistance of the patient is usually so low. Bags may be used, yet they, like packing, often augment the symptoms of many cases. Do everything possible to avoid catheterization, since bladder infection and pyelitis may be the source of an infection responsible for the severest type of neuritis.

Eclampsia: Its Prevention and Treatment.—A. L. Smith (*Brit. Med. Jour.*, July 26, 1919, 101) says that in order to prevent eclampsia one should examine the urine at least at the end of each of the last four months, and if albumin is present put the patient on a milk or vegetable diet; give sodium bicarbonate and laxatives, and keep the patient warm, in bed if necessary. If a convulsion occur, one should not give chloral or chloroform, or veratrum viride, nor employ venesection. Pregnancy should not be allowed to continue when it is known that brain and kidneys are being irreparably damaged. Accouchement forcé, vaginal Cesarean section, and craniotomy, in the interests of the mother as well as of the child, are no longer justifiable. Abdominal Cesarean section performed by an experienced operator is one of the safest operations in surgery for the mother, and it enormously increases the changes for the child if performed after the end of the seventh month when the child is viable. The best time to operate is before labor begins and before the woman has been examined by an ungloved hand. The few deaths which now occur are due to infections of the uterus. Eclampsia is not a one man case. There must be three doctors and a good trained nurse if every case is to be saved. If the proper conditions cannot be obtained at her home, it is better to send her to a good obstetric surgeon at a good hospital.

Conduct of Labor and Puerperal Sepsis.—J. H. E. Brock (*Lancet*, Aug. 16, 1919, 277) says that to gauge results by hard figures is to admit the comparatively small reduction in the mortality rate from puerperal sepsis. The returns for the last seventy years prove that, for some of the earlier years, the death-rate was almost identical with some quite recent ones. He believes that the reason why there is such a large amount of sepsis still rampant in parturition is that the woman begins her labor with the vaginal canal, and sometimes the uterine canal, surgically unclean. He bases this assumption on the notorious clinical fact of the prevalence of ophthalmia and conjunctivitis among children, within the first week of birth. The organisms that produce puerperal sepsis are varieties of streptococci, staphylococci, gonococci, and, as Bonney claims, also Bacillus coli. All these may produce conjunctivitis. Their transportation into the vagina is very easy. The skin of the external genitals is probably the most heavily infected cutaneous surfaces in the body. On the basis of these facts the conduct of a case of pregnancy and labor should be as follows: The patient should have a general physical examination, and the state of her health should be accurately gaged. At the time of examination the urine should be examined, and the examination should be repeated at intervals of two months. The external diameters and circumference of the pelvis should be taken; also indications of marked lateral curvature, old angular curvature, and past rickets should be looked for. A careful abdominal examination should be made between the seventh and eight months, or later if the pelvic measurements are normal, to ascertain the position of uterus and contained fetus. The position of the fetal heart sounds in this connection is of great importance. If the patient is a multipara the history of previous confinements should be obtained. Armed with this knowledge it will be possible to conduct the vast majority of labor cases without vaginal examination.

Results to be Expected from Antenatal Care.—E. Holland (*Lancet*, 1919, cxcvii, 53) shows by tabulation of the causes of fetal death that out of the 50 per cent. which are theoretically preventable, about 20 per cent., of which three-quarters are syphilis, could be prevented by antenatal methods alone. Twelve per cent. depend for their prevention on combined antenatal and intranatal methods, and 20 per cent. on intranatal methods alone. Although antenatal work is of immense importance and we must not abate by one jot our enthusiasm for it, yet the importance of the intranatal period and the necessity of getting a better standard of midwifery must be recognized much more than at present. The majority of dead fetuses have met their death in the intranatal period, many cases of intranatal fetal death occur from causes beyond the control of antenatal care, and antenatal care itself depends on intranatal skill for its successful issue.

Dental Conditions at an Antenatal Clinic.—In a survey of the patients coming to the antenatal clinic in the Edinburgh Royal Maternity Hospital, J. W. Ballantyne (*Brit. Med. Jour.*, July 26, 1919, 103) found among one hundred expectant mothers, drawn by no means from the poorest class, most of them enjoying a fair measure of health, half of them primiparas, more than half of them under twenty-five years of age, that ninety-eight had more or less defective teeth, ninety-three had had more than one tooth pulled, or had lost more than one tooth by caries, and nearly half (48 per cent.) were wearing false teeth, eight having two plates and thirty-eight a single plate. These figures point to the existence among working-class mothers of an alarming amount of dental deficiency and disease with, in not a few cases, concomitant oral sepsis. These conditions cannot fail to react injuriously upon the mother's digestion, and through it upon the nutrition of her unborn infant. They may also retard the return to complete health and strength in the puerperium, even if they do not increase the danger which always exists then of septic infection. They cannot be helpful in lactation. They call for a campaign among the potential mothers of the nation for the saving of teeth by all the means with which preventive dentistry is furnished. The results seem to point to a revision of the custom of giving a sort of "close time" for the teeth during pregnancy—a time during which dental disease is suffered to go on unchecked. The risk due to caring for the teeth and even of extracting them must be considerably less than that arising from operations situated so near to the uterus as, say, appendicectomy or ovariotomy. At any rate, it is worth while to reopen this question and ask for cases in which modern dentistry is responsible for obstetric accidents.

Puerperal Infection: Its Relation to Polypoid Decidual Endometritis.—A. J. Myulasy (*Med. Jour. Austral.*, July 26, 1919, 61) has come to the conclusion that the great majority of cases of serious puerperal infection, fundamentally associated with the interior of the uterus, are due to polypoid decidual endometritis, with or without adherent placenta. This conclusion is based on clinical observation, extensive study, on autopsies and on microscopic sections of specimens. *Polypoid* decidual endometritis is an interstitial inflammation of the decidua, the process to some extent involving the underlying muscle. The involved decidua may take the form of polypoid or of papillomatous outgrowths especially over the placental site, or it may be merely thickened and uneven, the particular type depending apparently on the extent and distribution of the interstitial fibrous tissue. The disease may or may not lead to abortion, the most pronounced cases being met with after full-time labor. It is a frequent cause of adherent placenta. The outstanding feature of the disease from a clinical standpoint is the singular liability of the diseased decidua to become infected and thus perhaps to lead to septicemia, thrombo-phlebitis, or other fatal effect. The microscope practically always gives evidence of this infection of the diseased decidua. The indications for treatment then become clear; the diseased membrane shall be removed promptly and thoroughly. The only means of diagnosing polypoid decidual endometritis, exclusive of intra-uterine examination, lies in careful observation of the involution of the uterus after delivery. If this does not proceed satisfactorily, the uterus remaining large and lax in spite of the placenta having come away complete and no other cause being present to explain the retarded involution, we are generally justified in assuming the presence of polypoid decidual endometritis and proving it by intrauterine examination. If in this stage (when there may be neither fever, quick pulse, foul discharge, nor hemorrhage) we remove the diseased decidua, the patient is practically certain to recover; otherwise she may die of puerperal infection. The features of origin of this disease appear to be: (1) A low grade irritant; (2) the irritant acting over a rather long period. It is thus possible that the gonococcus may also act as a causative agent.

B. GYNECOLOGY.

Abdominal Surgery under Local Anesthesia.—R. E. Farr (*Jour. A. M. A.*, 1919, lxxiii, 391) emphasizes safety as the one great advantage of local over general anesthesia. Shock bears a direct relation to the amount of blood lost during an operation. In local anesthesia, the use of epinephrin and the possibility of doing more deliberate work give one a control over the blood supply that is superior to that offered under general anesthesia. The turgescence of the vessels, especially in the venous system, when general anesthesia is used, is avoided. The dangers from sepsis probably differ very slightly in the two forms of anesthesia. The placid condition of the viscera under local anesthesia possibly gives technical advantages. Good infiltration anesthesia, resulting in a negative intraabdominal pressure, with the viscera retracting from the laparotomy wound instead of extruding through it gives better opportunity for inspection and operative work than can be obtained by other than most profound general or spinal anesthesia. Other things being equal, an operation which is done deliberately will receive more attention to detail and be performed with more finesse than when the surgeon is making every effort to finish the operation as quickly as possible. Assuming that the amount of hemorrhage and trauma are reduced by the use of local anesthesia, the natural inference would be that there would be less shock following operations performed under local anesthesia. The absence of thirst, nausea and vomiting, with their resultant dangers and disagreeableness, the low percentage of gas pains, which occur almost directly in proportion to the amount of trauma inflicted by abdominal packs and handling, are in marked contrast to that which takes place in patients who have been operated on under general anesthesia. The local anesthetic of choice is procain, 0.5 per cent. in Ringer's solution, combined with epinephrin, 5 drops to the ounce. In all except hernia cases we depend on a direct infiltration of the abdominal wall rather than on a conduction anesthesia. All layers of the abdominal wall are infiltrated before the incision is made. With the pneumatic injector the ordinary abdominal wall can be anesthetized in from two to three minutes. The average time, from the beginning of the administration of the anesthetic until the abdomen is opened, is from five to seven minutes. Careless or vigorous retraction of the abdominal wall will produce expulsive efforts. With the flaccid abdominal walls usually found under local anesthesia, only the mildest kind of retraction is necessary. The most satisfactory retractor is the wire automatic, which gently and symmetrically spreads the incision. Pressure and traction on the round ligaments of the uterus are painful; and the ovarian pedicles, the meso-appendix and the region of the cystic duct, are also sensitive. Traction on the mesentery is much more apt to cause nausea than acute pain, and one must be especially careful about making traction on the cecum and duodenum. All pelvic conditions of a simple nature may be handled under local anesthesia with great satisfaction. As a certain percentage of pelvic work, however, either is complicated by the sequelæ of infectious processes or must be done to eradicate malignant disease, one encounters a fairly large percentage of cases that are difficult to handle under straight infiltration anesthesia. A combined caudal anesthesia with an infiltration of the abdominal wall in conditions in which difficult pelvic work is anticipated usually gives ideal anesthesia. Above the pelvis there is little difficulty in making intestinal resections, even with glandular involvement. In the upper abdomen, the stomach, duodenum and gall-bladder have most often been dealt with. All plastic surgery on the abdominal wall, with or without adhesions, falls readily into the ideal class for local anesthesia.

Use of Benzyl Benzoate in Dysmenorrhea.—J. C. Litzenberg (*Jour. A. M. A.*, 1919, lxxiii, 601) states that the cause of dysmenorrhea is still unsettled and the treatment has been unsatisfactory. Antispasmodics are logically indicated, for in spite of doubtful etiology the painful spasm of the uterine muscle is incontrovertible. Benzyl benzoate has an antispasmodic action and is practically nontoxic, which gives it preference over atropin. The writer's series is too small to permit conclusions, but is given for what it may be worth. Of the forty-three cases presented, in 81.3 per cent. the patients were relieved of painful menstruation. Pain was absolutely eliminated in 62.7 per cent.; greatly relieved in 18.5 per cent.; slightly benefited in 4.6 per cent.; not relieved at all in 13.9 per cent. These results, while not conclusive, warrant a thorough test, by the profession, of the value of benzyl benzoate in dysmenorrhea. Of a 20 per cent. emulsion with acacia in aromatic elixir of eriodictyon a dose of two drams every two hours was employed.

Trendelenburg Anesthesia in Surgery of the Pelvis.—D. Guthrie (*Jour. A. M. A.*, 1919, lxxiii, 388) is convinced that the Trendelenburg method of anesthetizing plays an important rôle in the prevention of postoperative ileus and shock. Trauma to the small intestine is one of the direct causes of postoperative shock and ileus. The object of the method is to rid the pelvis of as much of the small intestine as possible before the abdomen is opened for an operation in the pelvis. It is best employed for ether anesthesia. The anesthesia is started with the patient in the high Trendelenburg position on the operating table; if in an anesthetizing room, on the table which is to be used during the operation, and with the patient in the high Trendelenburg position. To change the patient's position as she is getting under the influence of the anesthetic frightens her and starts straining or coughing, either of which is fatal to the success of the method. To wait until the patient is fully anesthetized and then change her position does not give the diaphragm time enough to pull the intestine out of the pelvis. If the anesthetic has been given successfully and the patient has not strained or coughed while going to sleep, it is usual to find only a coil or two of small intestine in the pelvis, provided the intestine is not adherent to the pelvic structures. Through a small opening in the peritoneum, two fingers of the right hand are inserted into the cavity, and the abdominal walls are well lifted up. The inrushing air will cause any coils of intestine which have not gravitated out of the pelvis to slide upward, so that it is usually necessary to employ only one small gauze square to get excellent exposure.

hronic Inversion of the Uterus Treated by the Kuëstner-Piccoli Operation.—Oliviera Motta (*Revista di gynecologia, d'obstetricia e de pediatria*, 1919, xiii, 125) relates the case of a woman aged twenty-five who appeared at the clinic of Professor Coelho in March, 1914 with complete inversion of the uterus of one year's duration. There was no prolapse. When confined of her first child she had been assisted only by an amateur midwife who had made strong tractions on the cord to extract the placenta with the natural result of uterine inversion. Hemorrhage had been arrested but it had been impossible to replace the uterus. When one year later she came to Rio a Barnes bag had been introduced and worn for twenty-four hours without result. The bag was then withdrawn and Coelho performed the Kustner-Piccoli operation. The sequelæ were normal and the wound was healed in ten days. The intervention lay between the milder manual procedures which have their own special indications, and total hysterectomy, consisting as it did of a posterior colpohysterotomy.

X-rays in the Treatment of Certain Forms of Dysmenorrhea. F. Hernaman Johnson (*Lancet*, 1919, cxcvii, 432) states that certain conditions should be fulfilled before any case of dymenorrhea is treated by the radiologist. They are: (1) Treatment by ordinary medical methods (drugs, regulation of way of living, etc.) should have a trial of a few months; (2) surgical investigation must be made to exclude any gross deformity, and any minor surgical procedure not dangerous to life—*e.g.*, dilatation of the cervix—tried if it seems indicated. The type of case most suitable for *x*-rays presents the following characteristics: (*a*) It is free from gross organic lesions. (*b*) There is excessive and prolonged bleeding at the menstrual periods, which follow one another with undue rapidity. (*c*) There is more or less pain of the usual menstrual type, and frequently headache and mental depression. (*d*) Owing to the excessive loss of blood and the shortness of the intervals the patient never really feels fit. Cases conforming closely to the above type yield to *x*-ray treatment with great regularity. A wide cone of rays is used, filtered through 3 mm. of aluminium, so that the ovaries and uterus receive radiations more or less equally at each sitting. The external genitals are protected by ray-proof material to prevent any possibility of temporary epilation. These patients are rarely able to attend for treatment for much more than two weeks out of four; and endeavor should be made to give at least seven sittings during each interval. The first period after starting treatment is usually worse, and the second may be little better. But if the treatment is going to succeed, the third should show distinct improvement. When improvement is obtained, *x*-rays are omitted during the fourth interval, and a final course given during the fifth.

Cancer of the Rectum; the Choice of Operation.—I. Back (*Lancet*, 1919, cxcvii, 421) states that only 30 per cent. of cases of carcinoma of the rectum admit of radical operation when first seen. When radical operation is impossible, a hypogastric colostomy should be done *at once*. Radical operations which aim at retaining the anal canal are pathologically unsound. The only sound radical operations are: the two-stage operation (colostomy and intraperitoneal excision by the perineal route later); and the combined abdomino-perineal operation. Of these, the former is the better except in the case of a growth situated at the junction of the sigmoid and the rectum.

C. MISCELLANEOUS TOPICS.

Protecting the Third Line of Defense, Our Babies.—L. Stewart-Cogill (*Penn. Med. Jour.*, 1919, xxii, 774) says that at the prenatal clinic a full physical examination should be given at the first visit; careful history of previous health and labors and family history should be taken; careful pelvic measurements, Wassermann test, microscopic examination of vaginal secretions, and urinalysis made; blood pressure taken; abdominal and vaginal examinations made; instructions given to expectant mothers as to hygiene, diet, clothing, care of nipples, prevention of miscarriage, etc. Patients should be instructed as to the meaning and seriousness of certain symptoms and to report at once the occurrence of same; also instructed to report to the clinic every two weeks or oftener, bringing specimen of urine, at which time blood pressure should be taken and general observation of patient's condition made. Patients should be visited in their homes by nurse and instructed in preparation of clothing, sanitation, etc., and encouraged to save money for expenses of confinement. In the postnatal clinic vaginal examination of mother should be made and notes taken as to condition of perineum, vagina, cervix, fundus, its position and involution; treatment as needed should be given, with instruction to return every two weeks with baby until end of the eighth week, when mother can be referred to the gynecological department for further attention and infant to health clinic to be kept well.

Lactose, Fat and Protein Content of Women's Milk. Newer chemical methods make it possible to quantitate accurately the fat, lactose and protein from small samples of milk. Employing these, W. Denis and F. B. Talbot (*Amer. Jour. Dis. Child.*, 1919 xviii, 100) found that there is a rapid increase of lactose during the first few days when colostrum changes into milk, and a further increase as lactation progresses. The reverse is true of protein which after the first rapid decrease during the change from colostrum into milk tends to further decrease during the course of lactation. After the colostrum period there does not seem to be any relation between the stage of lactation and the amount of fat in the milk. There is usually a higher percentage of lactose at the beginning of a single nursing than at the end. Although this difference may be one or more per cent., it is usually less. It is almost the rule for the percentage of fat to be much higher at the end of nursing than at the beginning. There is very little, if any, difference in the protein.

The milks taken simultaneously from both breasts of the same woman tend to have the same composition, but often vary in respect to the percentage of fat. Toward the middle or later afternoon the volume of milk in a woman tends to diminish. The percentage of fat is as a rule higher at mid-day or mid-afternoon than at other times of day.

ITEMS.

AN APPEAL FOR HUMAN EMBRYOLOGICAL MATERIAL.

BY

WILLIAM W. GRAVES, M. D.,
St. Louis, Mo.

In 1906 I observed certain malformations of the human shoulder-blade, and in contributions to current literature I have given them the collective name—"the scaphoid type of scapula," and pointed out some of its hereditary, clinical and anatomical significance.

Probably the most important observation connected with this type of scapula in man is its age incidence, that is to say, it occurs with great frequency among the young and with relative infrequency among the old. There appear to be two possible explanations of this fact: Either *A*, one form of shoulder-blade changes into the other during development and growth, or *B*, many of the possessors of the scaphoid type of scapula are the poorly adaptable, the peculiarly vulnerable, the unduly disease susceptible—the inherently weakened of the race.

I have attempted to answer these questions by seeking evidence in various directions and one of the most important of these has been a study of intrauterine development of shoulder-blades. My investigations in this direction have been limited by the material at my disposal, which has been inadequate for a definite solution of this phase of the problem. I am, therefore, appealing to physicians for fetuses in any and all stages of human development.

It is desired that the material, as soon as possible after delivery, be immersed in 10 per cent. formalin in a sealed container, and be forwarded to my address, charges collect. Due acknowledgment will be made to those forwarding material.

727 METROPOLITAN BLDG.

THE AMERICAN CHILD HYGIENE ASSOCIATION, formerly the American Association for Study and Prevention of Infant Mortality, will hold its Tenth Annual Meeting at Asheville, N. C., November 11–13, 1919.

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ANNOUNCEMENT.

To Our Readers and Contributors:

The Editor and Publishers of the American Journal of Obstetrics and Diseases of Women and Children regret to announce that this periodical will be discontinued with the present issue. During a period of over half a century this Journal has endeavored to serve the medical profession faithfully and we are proud to know that its pages have reflected the development of American gynecology and obstetrics during their formative period. The experience of the past few years seems to show, however, that journals devoted to specialties cannot be made self-supporting and the greatly increased costs of manufacturing, including the latest demands of the printers, averaging an increased schedule of charges of over fifty per cent., have finally turned the scale.

For the support of the Journal by the profession during its long career, the Editor and Publishers beg to express their appreciation and greatly regret that the force of circumstances must bring about a severance of these hitherto pleasant relations.

New York, December 1, 1919.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Transactions of the Thirty-second Annual Meeting, Cincinnati, September 15–17, 1919.

INCIDENCE OF MALIGNANCY IN DISEASES OF THE GALL-BLADDER.*

BY
JOHN F. ERDMANN, M. D., F. A. C. S.,
New York, N. Y.

GUESTS and Fellows of the American Association of Obstetricians and Gynecologists: I have the pleasure, in the full sense of the word, of extending to you my cordial greetings as president of this prominent scientific body, and of assuring you that I am deeply affected by the honor bestowed upon me at our last meeting in Detroit, the city where reading and writing have recently been questioned as essential to either financial success or newspaper notoriety. Little did I think, when presenting my thesis on pancreatitis, and my person, at the last meeting held in this city thirteen years ago, that the pleasure of occupying the chair, even if not of filling it, would be mine.

May I trust that you will not suffer too great a disappointment in my proceeding with a scientific paper instead of the usual presidential address?

During the early part of this year I was startled by the repeated observation of malignancies of the gall-bladder occurring in my private practice. Within a period of six weeks I opened the abdomen for suspected cholecystitis about thirty times and found six malignancies. Within the following eight weeks I saw, in forty-five operations for cholecystitis, three more carcinomata of the gall-bladder. While such an occurrence may perhaps be classed only as a pursuing evil, or a coincidence, nevertheless it gave me much food for thought on the subject of the incidence of malignancy in gall-bladder disease.

For years I had accepted the fact that malignancy of this viscus occurred in about 4.5 per cent. of all gall-bladder operations and was,

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* President's address at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

NOTE.—The Editor accepts no responsibility for the views and statements of authors as published in their "Original Communications."

therefore, forced by the aforementioned occurrence to believe that my reading, observations, and earlier contributions on this subject were in error, or that I had had a phenomenal run of carcinomata of this zone.

In addition to the malignancy of the gall-bladder, several cases of general carcinomatosis of the abdomen were encountered and in these I felt that, in view of finding the greatest amount of malignant tissue in the hepatic zone, they were also malignancies of the biliary tract; but for want of a better understanding as to origin, I included these cases in my statistics under "unclassified" carcinomata.

In an earlier contribution, on gall-bladder work, published about twelve years ago, I cited a series of 105 operations, five of which were for carcinoma, almost 5 per cent. In a later contribution, about three or four years ago, I failed to take account of the malignancies, as I felt quite sure that the percentage would not exceed 5.

In to-day's report I shall begin with the first half of this year's work which contains nine carcinomatous gall-bladders in a series of sixty-eight operations upon this organ, occurring in an operative list of 502 patients. The first half of the year 1918 presents three malignancies in a series of sixty-three operations on the gall-bladder, out of a total of 491 operations. The second half of 1918 presents but two malignancies of this viscus in forty-seven operations upon the gall-bladder, out of a series of 474 major operations. The last half of the year 1917 gave but one malignancy in forty-seven gall-bladder operations, out of a general operative list of 506. These figures and statements show, in the main, the remarkable occurrence of malignancies in the early months of this year, and go to prove my contention that the malignancies observed in the first portion of this year must be considered a mere coincidence.

Since I am convinced that this period of time would be ample for a relatively satisfactory conclusion on the part of an individual operator, a summary of these cases for the past two years gives the following:

June 15, 1917, to June 15, 1919, number of patients operated upon, 1903. Of these, 224 cases were operated upon for cholecystitis, and in fifteen of them the gall-bladder was found to be malignant, a percentage of 6.7; and 0.8 per cent. of these gall-bladder malignancies were found in my entire operative work during these twenty-four months.

I wish again to emphasize the fact that there were among them thirteen cases of general abdominal carcinomatosis in which the primary focus could not be positively demonstrated; but, in the majority of them, the point of greatest involvement was in the neighborhood of the gall-bladder. The stomach and adjacent structures were positively not the source of origin.

In the 1903 patients operated upon, malignancies of all kinds, excluding the lip epitheliomata, were found 285 times. Recalling that fifteen of the 285 malignancies were of the gall-bladder, it will be observed that the occurrence of gall-bladder malignancies to the whole number of malignancies is about 6 per cent. The malignancies positively specified in the collection are: gall-bladder, 15; stomach, 43; breast, 66; cecum, 12; colon and sigmoid, 28; rectum and recto-sigmoid, 29; not specifically classified, 79. The seventy-nine unclassified cases include malignancy of the uterus, kidney, larynx, tongue, liver, thyroid, etc.

The ages of patients having gall-bladder malignancy varied from forty-two to sixty-seven. All were females. Malignancies of the gall-bladder I believe to be far more frequent in the female than in the male. Cholecystitis, likewise, presents itself more frequently in the female. Malignancies of the duct, pancreas, and papilla, however, occur more frequently in the male.

Through the kindness of the Registrar of the New York City Board of Health, Dr. W. H. Guilfoy, I am able to present a few of the data of deaths from malignancy in 1918 in New York City. Unfortunately no line was drawn by the Health Department between gall-bladder and liver cases; all were recorded under the title of "Liver and Gall-bladder." Among this class of cases, 192 died out of a list of 2170 deaths due to cancer. Hence 10 per cent. died of hepatic and gall-bladder malignancies. Of the 192 cases, ninety-seven were females. In the review of the list given by the Board of Health, it is well to know that the majority of these cases were not operated upon. In other words, the autopsies, as well as the examinations made during life, were few as compared with deaths due to other diseases. In another sheet Dr. Guilfoy states that, of the 192 gall-bladder and liver malignancies, four males and two females were subjected to operations, while the remaining 186 received no operative treatment. This calculation bears out my supposition as recorded above.

While malignancy occurs in any decade of life, it manifests itself chiefly in the fourth, fifth, sixth, and seventh. Five of the deaths recorded by the Board of Health during the year 1918 occurred one at 15, one at 24, one at 25, and two in the fourth decade.

In this period of time, the Board of Health records 957 deaths from cancer of the stomach and intestines, of which 516 were males and 441 females.

Thus it may be safely stated that the frequency of cancer of the biliary system occurs in the following order: (*a*) Gall-bladder, cystic duct, and liver. (*b*) Pancreas, with common duct contiguity. (*c*) Common and hepatic ducts. (*d*) Papilla of Vater.

In all of the patients, victims of carcinoma of the gall-bladder, recorded in this communication, stones were found in the gall-bladder. It would seem, therefore, that the presence of gall-stones, or of biliary sand, is a provocative factor in the production of malignancy. If this be true, the early elimination of such irritants is advisable.

While I do not wish to take the ultra-radical stand of advising operation in every gall-bladder affection, nevertheless the statistical side of malignancy, as compared with the operative mortality, should be definitely, clearly, and positively placed before all patients having gall-bladder disease.

It is recognized to-day that the mortality of cholecystostomy and cholecystectomy is well under 4 per cent.; in fact, below 3 and even 2 per cent., in the hands of experienced clinicians; and if it is recognized that the malignant incidence is between 4 and 6 per cent., it can readily be seen that the patient selecting the operative risk has the advantage of avoiding a malignant death by 2 to 3 per cent. Nevertheless, death to all of us is as certain as day, and the selection of the type of demise must be left to the individual after a careful illumination of both sides of the question.

Symptoms.—No definite symptoms of malignancy can be described in the early onset of the disease. When the symptoms point to a cholecystitis, an operation is justifiable for the purpose of relieving the patient of the lesser disease, and of easing the mental state when malignancy, the greater disease, is supected. When the gall-bladder, or the mass in the right hypochondriac region, becomes so large as to be palpable in non-acute cases, with or without a jaundice of the ever-deepening variety, malignancy must be given weighty consideration. Continually increasing jaundice, slow or insidious in onset, is in itself a pathognomonic sign of malignancy; but, as frequently happens, a stone may be painless in its impaction, and the consequent jaundice may not be intermittent in depth of color. A Courovisier gall-bladder can often be felt through the wall of the abdomen; and though it may be tender, it is not painful. Loss of weight is evident only when the malignancy extends to the common duct, pancreas, or adjacent viscera. Many patients who have malignancy of the gall-bladder mention pain as the first symptom; and this symptom is prone to be in evidence, therefore, when the growth has advanced to the inoperable stage.

The operative treatment of this disease deserves rather weighty consideration. I have personally observed that interference with the gall-bladder, unless a complete cholecystectomy can be performed, is prone to be followed by a rapidly fatal issue. By the term "interference" I wish to convey the idea of removing the stones, since they are erroneously believed to be the entire source of pain and also the doing of a cholecystostomy or cholecystectomy, if the growth begins to be, or is established in, the cystic fissure, or if any suspicious metastases are discovered within the surrounding viscera.

A satisfactory ectomy can be done in certain cases of fundus and body of the gall-bladder involvements. These are the cases found, as a rule, as accidentals to the operation for cholecystitis.

Excisions of sections of the common and hepatic ducts have been done frequently enough to stimulate further efforts in this direction. While resection of the head of the pancreas has been beautifully illustrated by various experimental operators, the mortality in the human subject has been so high as to render this operation practically prohibitive.

The involvement of the papilla and ampulla is best overcome by a cysto-gastrostomy; when the growth of the papilla is obstructing the duodenum, then a gastroenterostomy is added; thus we rely upon a back-track current of the bile and pancreatic juice by way of the common to the cystic duct, to the gall-bladder into the stomach, and then into the intestines by way of the new stoma. Such operations as the two above described have been reported by Dr. C. G. Heyd and by me in the *American Journal of the Medical Sciences*, in August, 1916, under the title of "Relief of Chronic Obstructive Jaundice;" and again, by me, in the *Annals of Surgery*, March, 1918.

The youngest of my series of this type of involvement was a male eighteen years of age, who had an obstructive carcinoma at the papilla of Vater, also obstructing the duodenum. The combined operation of cystogastrostomy and gastroenterostomy, with excision of a large gland at the mid-portion of the duodenum and repair of a hole in the duodenum, due to pressure necrosis, was successfully done. The boy lived more than twenty-two months.

A close review of the statistics herewith presented will, I am convinced, justify the advice that an established diagnosis of cholecystitis predicates the possibility of occurrence of cancer, almost double that of the possibility of a mortality in case of operation.

60 West Fifty-Second Street.

CONTROL OF VENEREAL DISEASE IN DETENTION HOMES FOR WOMEN IN TIMES OF WAR AND PEACE.*

BY

PALMER FINDLEY, M. D.,

Omaha, Neb.

THE time has come for consideration of the question of the control of venereal diseases in times of peace. Much good has been accomplished throughout the period of the war by the Federal Government and local authorities in the control and treatment of women afflicted with venereal disease and now we are squarely confronted with the problem of continuing the work.

In many localities the work has been wholly abandoned and, so far as I am informed, there are few places where there has not been a decided relaxing in the efforts to detain and treat these cases.

All reforms go in waves. It is evident that we are now at low tide. This condition is not due to any lack of interest or effort on the part of the Federal or local authorities; it exists because the Government has not provided the means for the exercise of authority over these institutions and over the communities in which they are located. It is not enough to lend advice and encouragement. There must be a compelling force behind reform, if the work is to be carried on effectively. The moment the armistice was signed the Federal authorities, at least in this locality, ceased to function. They expressed their desire to see the work continued and proffered their moral support; but that was not enough. The military police ceased to coöperate with the city police in controlling the situation, and the public was not slow to recognize that military interference, in local affairs, was at an end. The result was that few cases were brought into the Home, and there was increasing difficulty in obtaining and detaining inmates.

I am firmly convinced that the work so splendidly begun will remain at its present low state of efficiency until laws are enacted which will place these Homes under the direct supervision of the Government. Local authorities, unsupported by the Federal authorities, cannot control the situation. I believe we had the moral support of the public at large in the work while the work was on; but the public will soon forget, and the deadly ravages of venereal disease will proceed unheralded and unrestrained, unless our Government can find a way to solve effectively the problem; and the solution of the problem rests in centralized authority.

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* Introduction to a Symposium on this subject and read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

In the October number of the AMERICAN JOURNAL OF OBSTETRICS (vol. lxxx, No. 3), I have given a report of the work done in the Detention Home for Women in Omaha. This report was read before the American Gynecological Society, in Atlantic City, last May. Work in the Detention Home has been continued up to the present, but with little support. The local authorities have made every possible effort in the prosecution of the work; but there are manifest difficulties which have not been overcome, with the result that our efforts have suffered.

There is no intention on the part of the local authorities to discontinue the work. They realize that the few inmates of the Home do not justify the maintenance of a fairly large overhead expense; but they are impressed with the importance of continuing the project in the hope that it may later be possible to obtain the necessary support to make the labor worth while.

I will not repeat what has been so recently published relative to our institution in Omaha (see AMER. JOUR. OBST., Oct., 1919). The men who are associated with me in this symposium will bring to you their experiences and their plans for the continuation of the enterprise in these times of "peace when there is no peace." These men have done a great work, while the work was on, and we shall do well to heed their advice.

BRANDIES THEATRE BUILDING.

THE VALUE OF DETENTION AS A RECONSTRUCTION MEASURE.*

BY

C. C. PIERCE, M. D.,

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Washington, D. C.

THE value of detention as a reconstruction measure should be of vital interest to the American Association of Obstetricians and Gynecologists, for it is to this group of the profession more than to any other except, possibly, the psychiatrists, that society must look for the development of this phase of the peace-time program that has to do with the prevention and control of venereal diseases.

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15-19, 1919.

Many of you are no doubt familiar with Sections 12 and 13 of the Selective Service Act. These two sections have perhaps surpassed anything thus far known in national legislation.

Section 12 prohibited the distribution of liquor to troops; Section 13 suppressed prostitution, not only in the immediate vicinity of camps, but within a zone whose limits were from five to ten miles surrounding each mobilization center, and further where the necessity for extension presented itself. To enforce these laws was no small task. The offenders, as well as their protectors, were extremely difficult to manage. The Law Enforcement Division of the Commission on Training Camp Activities, which was organized in September, 1917, was given the responsibility of enforcing the law contained in these two remarkable sections. The work in connection with Section 13 is the one to which I shall confine myself.

In September, 1917, when the Commission was formed, a committee on protective work for girls was created as one of the constituent parts of the Commission. The function of this committee was to provide protection for young girls in the mobilization areas, on the assumption that these girls needed protection to keep them from becoming sex offenders. Six months' work demonstrated that the number of delinquent girls in the vicinity of military camps was so great that a reorganization of the committee on a new basis was necessary. In April, 1918, the Section on Women and Girls was created as a part of the Law Enforcement Division of the Commission on Training Camp Activities authorized to deal primarily with women and girls who were sex offenders. The protective work and recreational work with the girls who were not sex offenders was left to local organizations.

One of the first and most prominent problems confronting the Commission was how to provide detention for women and girls arrested under this act. It is to be borne in mind that the cantonments were, with but few exceptions, located in comparatively small Southern cities where proper custodial care, even for ordinary, offenders, was quite undeveloped. To meet this emergency the President set aside from his War Emergency Fund, generally spoken of as the National Security and Defense Fund, the amount of $250,000 to provide suitable facilities for the custody and rehabilitation of girls and women who were a menace to the man in training. A special section was added to the Commission on Training Camp

Activities, known as the Section on Reformatories and Detention Houses.

That the offenders arrested under Section 13 were mainly prostitutes is clear and that they should be found infected with venereal disease is likewise obvious. Medical supervision then became the most important service in these detention homes created in the extra cantonment zones. The Public Health Service assumed the responsibility for the care of these delinquents. Very little attention was paid during the war to reconstruction work, because of the urgent necessity of other phases of the matter and the lack of adequately trained personnel.

Practically all the detention stations so established were of an emergency nature, as immediate action was necessary to meet the unusual situation that had been created. In a few instances it was possible to arrange with already existing institutions to admit and care for the persons held for detention, but this condition was the exception rather than the rule. In fact, during the year 1918 there were only about eight states that were making provision for the detention of venereally infected women, other than by confining them to county and city jails. Only one state had any provision for the detention of colored women.

As a result of the efforts of the various Federal agencies, thirty-four states provided more or less adequate detention measures for persons infected with venereal diseases, these being established in the towns and cities given in the list which follows:

STATES AND CITIES IN WHICH DETENTION MEASURES WERE INSTITUTED THROUGH FEDERAL REPORT.

ALABAMA:
- Anniston Detention Hospital, Anniston.
- Montgomery Detention Hospital, Montgomery.

ARKANSAS:
- Little Rock Detention Hospital, Little Rock.

CALIFORNIA:
- Los Angeles, Juvenile Hall.
- Los Angeles, Los Feliz Detention Hospital.
- Oakland, Walnut Creek.
- Sacramento.
- San Bernardino, County Hospital.
- San Diego, Mission Valley Hospital.
- San Francisco.

CONNECTICUT:
- New London, State Farm for Women, East Lyme.

GEORGIA:

- Augusta Detention Hospital, City Stocade.
- Atlanta Detention Hospital.
- Detention Hospital, Pinecrest, Buckhead (near Atlanta).
- Grady Memorial Hospital, Atlanta.

INDIANA:

- Detention Wards in City Hospital, Indianapolis.
- Terre Haute.

IOWA:

- Carroll, Detention Hospital.
- Council Bluffs Detention Home, Council Bluffs.
- Sioux City Detention Hospital, Sawyers Hill, Sioux City.
- Des Moines Detention Hospital, Des Moines.

KANSAS:

- Kansas Industrial Farm for Women, Lansing.
- Detention Hospital for Men, Kansas State Penitentiary, Lansing.
- Wichita.

LOUISIANA:

- Alexandria Detention Hospital, Alexandria.
- Alexandria, Fourth Street Extension.
- Detention Hospital, St. Francis Sanitarium, Monroe.
- New Orleans, Charity Hospital.

MAINE:

- Portland, City Home.

MARYLAND:

- Baltimore.

MICHIGAN:

- Bay City, Detention Hospital.
- Detroit, Canfield Street, Police Detention.
- Grand Rapids, DeVores Hospital.

MISSISSIPPI:

- Hattiesburg Detention Hospital, Hattiesburg.

MONTANA:

- Butte.

MISSOURI:

- Leeds, The Reformatory.
- St. Louis.

NEBRASKA:

- Omaha, Detention Hospital.

NEW JERSEY:

- Bayonne.
- Newark Detention Hospital, City Hospital, Newark.
- Detention Hospital, City Hospital, Jersey City.

NEW YORK:
- Amsterdam.
- Binghamton.
- Buffalo.
- Niagara Falls, General Hospital.
- Rochester, Municipal Hospital.
- Schenectady.
- Syracuse.
- Troy, House of Good Shepherd.
- Valley Stream, Wayside Home for Girls.
- New York City, Riverside Hospital, North Brothers Island.

NORTH CAROLINA:
- Samarcand, Women's Detention Home.
- Wilmington, County Home.

OREGON:
- "The Cedars" Detention Home, Portland.

OHIO:
- Detention Hospital, Ross County Infirmary, Chillicothe.
- Cincinnati, General Hospital.
- Cleveland, City Hospital.

OKLAHOMA:
- Lawton Detention Hospital, Lawton.

SOUTH CAROLINA:
- Greenville.
- Columbia House of Detention, Columbia.
- Detention Home, Spartanburg.

SOUTH DAKOTA:
- Aberdeen, Detention Hospital.

TENNESSEE:
- Chattanooga Detention Hospital, Chattanooga

TEXAS:
- El Paso Detention Hospital, El Paso.
- Detention Hospital, San Antonio.
- Austin Detention Hospital, Austin.
- Houston.
- Ft. Worth, Detention Hospital.

UTAH:
- Ogden, Detention Hospital.
- Salt Lake City.

VIRGINIA:
- Richmond, City Home, Detention Wards.
- Newport News City Farm, Newport News.

WASHINGTON:
- Seattle.
- Spokane, Rivercrest.
- Tacoma, Detention Home.

WEST VIRGINIA:
- Charleston, Salvation Army and Union Mission.

Most of these detention homes were temporary structures, and the equipment and personnel varied considerably, depending upon the amount of funds available and the possibility of securing trained workers to perform the duties of matrons and attendants.

Notwithstanding the difficulty attendant upon providing proper detention facilities, these institutions fulfilled a very essential and important function in limiting the spread of venereal diseases in the civilian areas adjacent to army and navy camps.

The establishment of these institutions was received by the local communities in a widely varying manner. In some places the officials and social agencies gave the institutions most cordial and intelligent support, while in others practically no help from the local community could be counted upon.

Some degree of criticism, likewise, was directed toward many of the institutions on account of lack of understanding on the part of the critics of the object to be accomplished. Several articles were written and published in various magazines criticizing the action of the Government in detaining venereally infected women, with the statement that such a procedure was a revival of the plan for regulating prostitution that has for many years been employed in various European countries, and that its effect upon the control of venereal diseases would be unsuccessful.

That such a view was erroneous can easily be shown by anyone familiar with the facts, which showed that the civil and military authorities were confronted with a condition, not a theory; a condition which required the immediate isolation of as many venereally infected persons acting as spreaders of disease as could be quickly apprehended and quarantined. It was not a measure instituted for the punishment of prostitutes on account of infraction of the civil or moral law, but was strictly a public health measure to prevent the spread of dangerous, communicable diseases.

The law specifically stated that the measures instituted were for the protection of the health of the soldiers and sailors. The soldiers and sailors obviously contracted their venereal infections from infected women. Therefore, for the purpose to be accomplished, it was not necessary to isolate venereally infected men prior to their induction into military service.

The assembly of large numbers of venereally infected prostitutes in these various institutions offered a splendid opportunity for sociological and psychological investigation of the causes of prostitution in general, and of the type of women that furnished the great bulk of prostitutes.

History sheets of more than 9000 individuals were collected among the 30,000 women apprehended during the war. These history sheets are now the property of the Interdepartmental Social Hygiene Board. Up to this time it has not been possible to study and tabulate these history sheets, but it is expected that this work will be accomplished some time in the near future. Undoubtedly, the data so obtained will be of great value to all those interested in the problem of the control of venereal diseases.

Intensive studies were made of two groups of detained women in widely varying states, the data of which are now ready for publication and will shortly appear as a bulletin of the Public Health Service. These studies disclosed some very interesting facts. A few of the details are given in the tables which follow:

DATA CONCERNING 100 WHITE PROSTITUTES FROM 95 FAMILIES.

Birth Place of Parents.

	Fathers	Mothers		Fathers	Mothers
Kentucky	40	44	Indiana	10	1
Tennessee	6	3	Ohio	3	1
Georgia	2	0	Louisiana	1	1
Missouri	1	3	Maine	1	1
Virginia	1	0	West Virginia	1	1
Texas	1	1	Pennsylvania	1	0
Mississippi	0	1	Illinois	0	1
Florida	0	1	Oklahoma	0	1
South Carolina	0	1	Born in U. S. but state unknown	14	7
Germany	4	2			
England	0	1	Ireland	1	1
Unknown	8	10	Switzerland	0	1

Education of Parents.

		Fathers	Mothers
Could not read nor write		15	9
Could read and write only		38	37
Grades attained	3d	1	0
	4th	1	4
	5th	0	3
	6th	2	2
	7th	0	1
	8th	1	3
	9th	1	5
Entered High School		1	4
Completed High School		0	1
Entered College		2	0
Unknown		33	26
		95	95

Alcoholic Habits of Parents.

	Fathers	Mothers
Habitually alcoholic	31	4
Alcohol used sparingly or not at all	43	76
Alcoholic habits unknown	21	15

GROUP 1.—*Age of subjects at time of mother's death*

Age of subject	5 yr. and under	6–10	11–15	16–20	21–35
Number of subjects	7	3	2	3	2

GROUP 2. —*Age of subjects at time of father's death.*

Age of subject	5 yr. and under	6–10	11–15	16–20	21–35
Number of subjects	5	4	2	5	1

GROUP 3.—*Age of twenty-three subjects at time of death of both father and mother*

Age at death of father:

2: 2: 3: 4: 5: 2: 3: 6: 10: 8: 8: 11: 4: 6: 16: 20: 16: 19: 8: 17: 14: 22

Age at death of mother:

2: 2: 4: 1: 5: 9: 7: 1: 1: 9: 12: 14: 17: 16: 2: 1: 1: 13: 21: 21: 23: 18

GROUP 4.—*Age of subjects at time of parents' separation*

Age of subject	5 yr. and under	6–10	11–15	16–20
Number of subjects	4	4	2	2

GROUP 5.—*Age of five subjects at time of separation and death of parents*

	1	2	3	5	5
Age at separation	9	12	18	8	7
Age at death of father	..	..	19		
Age at death of mother	16	19	..	9	21

Occupation of Parents.

	Fathers	Mothers		Fathers	Mothers
Farmer	43	0	R. R. Car Repairer	1	0
Housekeeper	0	72	R. R. Brakeman	1	0
Laborer	12	0	Fish Peddler	1	0
Factory Worker, Tobacco	2	4	Bookkeeper	1	0
			Painter	1	0
Carpenter	3	0	Coal Miner	1	0
Seamstress	0	3	Machinist	1	0
Locomotive engineer	3	0	Rate Clerk	1	0
School Teacher	0	2	Stationary Engineer	1	0
Railroad Foreman	2	0	River Pilot	1	0
Physician	2	0	City Fireman	1	0
Mechanic	2	0	Brick Mason	1	0
Saloon-keeper	1	0	Motorman, Street R. R.	1	0
Factory Worker, Wagon	1	0	Blacksmith	1	0
Upholsterer	1	0	Domestic	0	1
Minister	1	0	Milliner	0	1
Night Watchman	1	0	Laundress	0	1
Shoemaker	1	0	Clerk	0	1
R. R. Switchman	1	0	Unknown	4	10
				95	95

Ages of Subjects Examined.

Year	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	36	39	41	42	43	44	52
No.	1	7	5	8	10	8	6	10	5	3	5	5	4	2	1	1	3	1	5	2	1	3	2	1	1

Reasons for Detention in the Various Institutions.

Disorderly conduct	61
Quarantine	21
Drunkenness	6
Conducting disorderly house	4
Grand larceny	2
Petit larceny	1
Breach of peace	1
Forgery	1
Begging on streets	1
Contempt of court	1
Illegitimate pregnancy	1
Total	100

(Disorderly conduct covers street soliciting and certain other phases of prostitution.)

Previous Arrests of Subjects Examined.

No. of previous arrests	1	2	3	4	5	6	9	17	several
No. of individuals	21	9	4	2	3	3		1	4

Birthplaces of Subjects Examined.

Kentucky	60
Indiana	13
Tennessee	6
Missouri	4
Ohio	4
Texas	2
Louisiana	2
Virginia	1
Oklahoma	1
Alabama	1
Iowa	1
New York	1
Illinois	2
Ireland	1
Unknown	1
Total	100

Education of Subjects Examined.

Could not read nor write		7
Could read and write only		22
Grades attained	3d	6
	4th	11
	5th	15
	6th	8
	7th	11
	8th	11
	9th	1
Entered high school		6
Completed high school		2
Course in business school		2

Occupations of Persons Examined.

Factory Worker	36
Domestic	24
Waitress	15
Housework at Home	9
Laundress	5
Seamstress	2
Milliner	2
Cash Girl	2
Musician (Piano)	2
Wrappers (Dept. store)	1
Bookkeeper	1
Stenographer	1
Total	100

Alcoholic and Drug Habits of Subjects Examined.

Habitually alcoholic	34
Occasional users	27
Both alcohol and morphine	7
Alcohol, morphine, and cocaine	1
Alcohol and paregoric	1

Apparently none were using drugs at time of examination.

Civil Status.

Single	25
Married once	56
Married twice	18
Married three times	1
Total	100

Results of Marriages.

Separations	55
Divorces	4
Separated from one husband	4
Husband dead	8
Living with husband	4

Results of Wassermann Tests.

Negative	1 plus	2 plus	3 plus	4 plus
57	6	8	8	21

Of the 57 women given a negative Wassermann reaction, 4 gave a definite history of syphilis, 1, 12, 16, and 21 years ago respectively, with subsequent treatment; 4 had 4 plus Wassermann reactions during the past 10 months, and 1 had a 1 plus Wassermann 4 months previously.

Results of Microscopical Examinations.

Smears showing presence of gonococci	81
Smears regarded as doubtful	2
Smears not showing gonococci	16
Smear not made	1
Total	100

Mental Examination—Goddard Revision of Binet-Simon Scale.

Binet age under 10 years	41
Binet age of 10 years and under 12	50
Binet age of 12 years or more	9
	100

Psychiatric Classification

Feeble-minded	38
Constitutional inferiority	43
Epileptic with intellectual inferiority	1
Allied to epilepsy	2
Dementia precox	1
Normal, probably	7
Unclassified	8
	100

At most of the detention stations some effort was made to provide both recreation and occupation for the detained women. As these women were being isolated as a health measure, it was necessary to release them from detention as soon as they ceased to be a menace to the soldiers and sailors, a fact which was determined by finding them free from venereal infection in a communicable form.

The detention of persons suspected of being infected, or known to be infected, is absolutely imperative in peace time, as well as during war. Professor Albert Neisser, of Breslau, discussing "War, Prostitution, and Venereal Diseases," says:

> "The greatest possible sanitation of prostitution must be provided for, so far as efforts are unsuccessful by arresting them. I ask myself why this sharp but so useful measure is not relentlessly resorted to. This method of elimination is the most effective, since sanitation, in the case of the most prevalent venereal disease, gonorrhea, is impossible anyway, and because, considering the enormous number of visits of the individual females, not even a daily medical examination would accomplish the purpose, apart from the impossibility of performing a really good examination of prostitutes.
>
> "As regards syphilis, sanitation is much more conceivable. The capacity of all prostitutes for transmitting infection could easily be much lowered if every single one (without bothering about a special diagnosis) were subjected to an energetic salvarsan treatment, or perhaps treatment with salvarsan combined with mercury. If there should actually be one among them still uninfected with syphilis, the treatment would surely do her no harm."

The word "detention" unfortunately carries with it the stigma of a penal institution, just as "venereal diseases" implies to the lay mind diseases of venery or immorality. Effort must be made to inculcate into the minds of the public the fact that, while detention is imperative as a sanitary measure, it should not brand the detained individuals as criminals.

The two years of war have given us volumes of data proving conclusively that the prostitute or sex offender requires individual, correctional care to overcome the handicap of mental inferiority, physical defects, educational neglect, and hereditary and environmental influences.

The detention home has a definite place in the reconstruction programme, but it must be a detention home only in the sense that individuals are detained until such time as they can be returned to society equipped to take their places as respectable and respected citizens.

I do not pretend to be an authority on this important subject, or to lay down dogmatic rules and regulations for establishing and operating these homes; but in general I will say that the ideal location is in the country. This gives opportunity for out-door exercise, and work which is of great rehabilitating value. There must be sufficient space in order that the mentally normal can be separated from the subnormal, and that the girls be separated from the women, because the problem of moral contagion is as great as that of physical contagion.

Competent medical attendance is essential. Adequate hospital facilities for the care of venereal and other infections is imperative.

The atmosphere of the place should be as home like as possible, the personnel selected from women who are specially qualified and trained, and who have a sympathetic interest and a belief in the movement.

To use a detention home merely for the cure and treatment of venereal diseases is to promote a vicious cycle. Unless the individual detained is given a vocational training whereby a decent economic status can be maintained, the detention home contributes to delinquency rather than corrects it.

The responsibility of the institution in the matter of correctional therapy extends beyond the walls of the detention home. This responsibility is met only when an efficient system of following up cases is established and maintained. William Healy, in his book "The Individual Delinquent," says:

> "Comparable is the new social service work done in connection with hospitals—the principle being that if the hospital has given its services as far as the convalescent stage, it is a matter of the greatest economy to carry them still further, and see that the patient is restored to social efficiency. Now the hospital patient's inefficiency is mostly a negative quantity. The ex-prisoner's failure is a positive menace. Society has undertaken to treat him for his miscondcut; it desires his moral well being and general welfare. The penal failure, which is everywhere witnessed to by recidivism, can best be prevented by after-care methods that are based on full appreciation of the offender's needs and possibilities. Perfunctory parole

work is to be regarded as a weak effort. The same is true of aid to discharged prisoners by whatever agency—successful relief must be base on understanding of the individual and his relation to his environment."

The war-time detention house was designed primarily to meet an emergency; to protect the fighting men from venereal infections. The peace-time detention house for such an institution must be carried over with the peace-time programme; it must be designed to protect the working forces—posterity—from venereal infections. The peace-time detention home, however, must be designed along different lines. It must provide correction facilities as well as medical facilities. It must be a house of detention, a reformatory, a protectorate, a reconstruction station all in one. It must be part and parcel of the whole state programme supported by legal and executive machinery and by an educated public.

PIONEERING IN VENEREAL DISEASE CONTROL.*

BY

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VENEREAL disease is one of the most formidable evils to which mankind is subject, and one whose history, in all probability could be traced to the earliest records of the human race. Its progress through the generations have left in their wake a blind, maimed, sterile, and sexless multitude. To what an appalling degree women are made victims of these complaints through the men they marry!

Physicians in this special line of work well know the percentage of gynecological operations due to gonorrhea, and the result of syphilis on pregnancy.

We all appreciate that one of the greatest undertakings ever launched in this country, or any other country, for the good of humanity in the way of a public health movement, was the endeavor to formulate a plan to stamp out or control venereal disease. The fight is still being carried on by several different organizations, the principal ones being under Government supervision. The enormity of the task is known better by the men who were connected with one or more of these organizations, and who now fully realize, I am sure, that the end of the rainbow is only a stepping stone toward the final completion of the great task that they have undertaken.

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

An understanding of what venereal disease means to a community or a country is better realized by men who are handling this special line of work. The rank and file of physicians in their busy everyday walk of life do not give venereal disease close enough attention to be acute observers of the real destruction brought upon humanity by this hidden secret destroyer of human tissues.

Many years ago a noted French physician wrote that of all the diseases which affect the human species there is none more grave or more dangerous than syphilis. It has been a disaster to many good homes, it is a grave danger to public health, filling our asylums with epileptics, imbeciles, and idiots, our prisons with degenerates, and endangering a large percentage of our population.

In the last ten years about thirty thousand papers have been written on this subject. Physicians and crusaders have been wondering what could be done to avoid the suffering from venereal disease; but very little was accomplished until the recent war, when the War Department and Inter-departmental Social Hygiene Board opened the campaign under the direction of the Surgeons General of the Army, Navy, and Public Health Service, and the Secretary of th War, the Secretary of the Navy, and the Secretary of the Treasur The above officers took a great interest in this important work, and by their efforts prevented thousands of infections and saved thousands of lives.

During the War a great deal was accomplished in the control of venereal disease. The demand was in evidence and coöperation was given by everyone; but since the armistice was signed, the demand for the crusade against these diseases and the coöperation are lacking to a great extent, making the work doubly hard for those actively engaged in this important measure. We must bear in mind that we are dealing with diseases that are not like small-pox and various other contagious maladies but that one of the most important elements that we have to fight against is the natural tendency toward sexual indulgence, which is overcome with difficulty by the young offender, who, when encouraged to a certain degree, says to himself, "I'll take a chance."

As a matter of great importance to the success of this work, clearly defined, sensible laws should be enacted in all communities so that expense will be covered for detention homes and proper salaries for well trained health officers, and rulings provided so that the carriers of these diseases can be interned until they are free from infection, and be kept under observation by the authorities after they are released. Thus the importance of proper educational methods, such as authentic literature, lectures, films, etc., are the methods to bring about a demand in different communities for the suppression of these diseases, and to overcome to a great extent, or to help fight the desire for improper sex relation. Then proper laws and health officers of ability must be had to enforce the same without persecution.

Another important item in the success of this work is that it should be carried on under Government supervision, a measure which will arouse greater interest, as a great many civilians are of the opinion that if a certain measure is of sufficient importance to interest the Government, it should have careful consideration. Moreover, the people who were in Government employ, or in Government service during the War, knowing that the Federal service is still looking after the control of venereal disease, will take special interest, and will give more assistance to the work than they would under local laws and city ordinances. If the work is under Government control, better coöperation results in the law enforcement division, and less trouble between City, County, and State officers, as is usually the case in any law enforcement work.

Basing my opinion upon the judgment of a great many genito-urinary surgeons in different parts of the United States, I am inclined to believe that there are more venereal diseases in this country to-day than ever before. In making this statement, I do not feel that I am retracting anything from the good work that has been accomplished by the different organizations that are working on the control of these diseases. Their work has been a great success, but there has been a great increase in the number of infections, especially in the rural districts, on account of the soldiers of fortune that are traveling throughout the country, and the number of women that have been following the cantonments and the different soldiers' headquarters, traveling back and forth from one place to another, spreading infections, and leaving the same conditions as have followed in the wake of earlier wars.

Statistics on venereal disease amount to very little. The only statistics that are not all mere conjecture are those that are compiled in institutions, or in the Army; and the reason that these can be looked upon as authentic is the constant inspection, and the close watching of the men, or the patients, as the case may be. How many hundreds, or, I might say, thousands of cases of venereal disease we all have had that have never been reported, or have never been counted in the percentages published! We know that these diseases are affecting the vital parts of some of the best of our race. An authentic report which will be published in a short time states that gonorrhea and syphilis and their sequel are killing more people to-day in the United States than tuberculosis and pneumonia. If this statement is true, and I have no reason to say that it is not, I think that it is time to roll up the curtain, and to give the laity the plain facts concerning these diseases, just as we would of tuberculosis, cancer, or any other deadly disease.

If we would only stop to think of the number of boys in the American service that were infected within the first thirty days after they were discharged from the Army, and before they reached their homes! After fighting for their country, they were humiliated by having to return home with an infection of venereal disease contracted in their own country, probably in one of our cities, because the local civilian authorities did not want to embarrass the streetwalker or the prostitute by an examination.

I stated that educational methods, such as authentic literature, lectures, etc., are a good means of bringing about a demand in different communities for suppression of these diseases; but the carriers are not reached by this form of control. Law enforcement is the only method through which they can be reached, and if the law enforcement were strict enough, venereal disease could be wiped out. There is a certain class of people who might be called the venders of vice, the people who are making their living by promoting vice, supported by quack physicians and cure-alls, and political power, that are fighting work along this line, because enlightening the ignorant as to the dangers of infection, and the liability of infection drives trade away from the cribs and vice dens.

One of the very important movements that is going to reduce the number of infections of venereal disease is the stopping of the sale of liquor. Many infections are contracted while a person is under the influence of intoxicants.

I would say that about 90 per cent. of infections are due to women, and 10 per cent. to men. Men take more precautions, and are more particular about treatment and prophylaxis. Women are very negligent, and take treatment only for the relief of pain or under compulsion. One woman will infect ten men for every one woman that one man will infect. Prophylaxis should be encouraged. Prophylaxis is not an encouragement for improper sexual intercourse; it is merely a protection against disease; and if venereal disease is on the increase in our country to-day, after all the efforts on the part of various organizations, I think that all rational means should be taken to prevent infections in every possible way.

In the extra-cantonment zones, with Government assistance where law enforcement, quarantine, and prophylaxis were used, public health officers are of the opinion that venereal disease was reduced to a minimum, and the results were very gratifying. Clinics properly managed were a great assistance, and many thousands of cases were treated beyond the infectious stage, a condition which only goes to prove that if these same methods were carried out strenuously in every civilian community, the results would be wonderful.

One of the greatest accomplishments gained by the United States Public Health Service was in suppressing the quacks and abolishing counter prescribing. Very little could be gained in the control of these diseases while sufferers could patronize the quacks, or buy nostrums from the corner druggist. The reporting of these diseases by all physicians, which is now a law in almost every State, gave the health physicians a line on all cases treated by advertising physicians, and placed the advertiser in a very embarrassing position through the fact that, when a patient came into the advertiser's office, he would not know whether it was a case sent him by the local health officer to catch him for not reporting, or whether it was a case who came there of his own accord for treatment.

The druggist. unwilling to be arrested for practising medicine without a license, was afraid to prescribe, and therefore turned his venereal cases over to the physician near by in the hope that he would receive for his courtesy the filling of prescriptions for the patient.

The prostitutes and streetwalkers, afraid that they would be picked up at any moment for an examination, visited the doctors' offices, so as to be sure that they were not infected, as they dreaded the internment clause in the law enforcement.

The free use of laboratories for physicians and especially for those conducting clinics is of great benefit, and the reduction in the price of salvarsan means a great deal to the sufferers whose finances are limited.

A very important part in the development of this work depends largely upon the sort of coöperation given by the medical profession. If every physician in the United States would take a special personal interest in the control of venereal disease, it would go a long way toward the success of the movement. By encouraging local boards of health in reporting and in the internment of infectious cases, and by enlightening the public in their local communities regarding the havoc which these diseases play in the moral, physical, and economic life would be of great assistance.

An important point in considering the internment of women is that prostitutes are not the only carriers of venereal infections. In some of the large military venereal hospitals of London, statistics show that three-fourths of the infections were due to women who were not prostitutes, but who were common carriers, known in that country as "amateures" and we have found the same condition in this country in different communities. Young girls, from fourteen up, living at home, are the ones that are spreading a large percentage of the infections, and the greatest amount of good is being accomplished among this class of carriers by social workers, women of the Welfare League, police matrons, and probation and juvenile officers. All cases should be treated. A person suffering with a venereal disease should receive immediate attention, just the same as a person injured in an accident.

A properly conducted institution should be provided in every locality for the encouragement and treatment of these unfortunates; and men of knowledge, knowing the danger and the outcome of infections, should preach the gospel to the ignorant and the innocent to avoid these temptations in every way possible.

In summing up the work as carried on by the United States Public Health Service, I may mention first, the establishing of free clinics; second, the educational measures, and third, the internment of infectious cases that were pronounced a menace to public health, and the reporting of all cases in number to State boards of health, so that some accurate idea could be gained with regard to statistics of different States. If all these measures were carried out in every community, the results, I am sure, would be very gratifying.

Education induces the infected person to patronize a physician early in the infection, keeps her away from the druggist and the quack, and also causes the intelligent person to be more careful of becoming infected, and the already infected person to be more careful of infecting others. Then, it is true that sex instincts are modified by education and earlier marriages, and that more legitimate marriages will be a result of proper knowledge of this subject. All results such as these mean less infections of venereal disease. More outdoor recreaction, and athletics in institutions, both private and public, have a tendency to do good.

Clinics and free treatment give the poor unfortunate and the middle class an outlet for quick and speedy relief, which in a way lessens the number of infections. Reporting cases provides the authorities with statistics to work upon, and gives the infected person an understanding that the State and Government are taking an interest in this sort of disease, thus causing him to be more cautious.

Law enforcement and internment of persons who are a menace to public health, such as feeble-minded prostitutes, incorrigible girls, and streetwalkers, give the underworld to understand that they are walking on thin ice, that they must at all times be free from venereal disease, and that, if they infect anyone, they will be held responsible. This legal weapon in a measure, prevents a great many infections.

It is my belief that if the United States Public Health Service obtain the proper support and coöperation of the medical profession, and of the laity as well, their work will be far-reaching, and the generations to come will be saved from untold suffering by their efforts.

DAAIDSON BUILDING.

THE DETENTION AND TREATMENT OF INFECTED WOMEN AS A MEASURE OF CONTROL OF VENEREAL DISEASES IN EXTRA-CANTONMENT ZONES.*

BY

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WOMEN in the extra-cantonment zones in Virginia who were found conducting themselves in an immoral manner were apprehended by the local police, working in coöperation with the military police and law enforcement officers of the Commission on Training Camp Activities. Upon appearance before the police court magistrate they were immediately ordered to the Public Health Service and Red Cross out-patient clinics for examination to determine whether or not they were infected with venereal disease. Pending the outcome of the examination, they were usually held in the detention home, although the jails were sometimes utilized for this purpose.

Those found to be infected with venereal disease were committed to the detention hospital for treatment until such time as they were considered noninfectious. They were then returned to the police court for trial on the charge for which they were arrested, and invariably released by the judge without further detention.

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

A most extraordinary feature in connection with the detention of these women was the influence brought to bear to secure their premature release. Prominent and respected city officials, bank officers, doctors, ministers, lawyers, and representatives of almost every walk of life, all were actively concerned at one time or another in obtaining freedom for infected women of the lowest order. Many wearisome hours were expended in convincing these people that neither persuasion nor threats could secure release until the patient was considered noninfectious.

The period of treatment varied from one to five months; the average was about three months. One case remained under treatment eight months. At the hospital at Newport News, cases were treated by the physician in charge on alternate mornings. His treatment consisted of swabbing the urethra with 10 per cent. nitrate of silver, swabbing the cervix with 5 per cent. nitrate of silver, and inserting a gauze tampon of argyrol or protargol. On the following morning the patient removed the tampon and administered a bichloride douche 1–10,000. In the evening she took a saline douche. The douches were taken under the supervision of a trained nurse in a room especially equipped for the purpose. Another method of treatment consisted of swabbing the vagina and cervix with 10 per cent. nitrate of silver and tamponing with 1 per cent. picric acid.

In cases of gonorrhea, four successive negative slides taken one week apart were required for release. Douches were not permitted on the day preceding the taking of slides. Cases of syphilis were released as noninfectious when there were no visible lesions of the skin or mucous membranes, and after several injections of salvarsan combined with mercurial treatment.

During the period from December, 1917, to December, 1918, there was a total of 208 patients treated in the detention hospital at Newport News. All of these cases were infected with gonorrhea, and forty of them had syphilis besides. No cases of syphilis alone were treated at the hospital.

Of the 208 patients, 160 were colored and forty-eight were white, and it is interesting to note that of the 160 colored patients only eight came from out of town, while of the forty-eight whites, forty-six were from out of town.

The patients ranged in ages from eighteen years to forty-two years; the average was but slightly over twenty years. The vast majority of the whites were of an extremely low grade of intelligence.

In the opinion of the writer the detention hospitals were a potent factor in controlling the spread of venereal diseases in extra-cantonment zones in the following manner:

1. By making it possible to remove a large number of infected immoral women from the community and to hold them absolutely apart from the general population for a number of months.

2. By making the chances of isolation for a considerable period of time so great as to discourage immoral women from operating in these areas.

3. By giving a practical demonstration to the community of the high prevalence of venereal diseases among immoral women, and the time and effort necessary in the treatment of these diseases.

4. By actually removing foci of infection by medical treatment.

The actual treatment of the women is believed to have been of far less importance in controlling venereal diseases in the extra-cantonment zones than the other factors mentioned. None of the women gave the slightest indication of any intention of changing their mode of life. It was what they were accustomed to, what they liked, and what they intended to follow. In this connection the efforts of doctors, nurses, and social workers proved of no avail. One of the most promising and intelligent of the women was encouraged to learn something of practical nursing during the months that she spent at the hospital. She became very proficient in the preparation of patients and in simple nursing duties, and apparently was much interested. Upon her discharge from the hospital, a position was secured for her as assistant in the operating room of one of the local physicians at a salary sufficient to enable her to maintain herself in respectable surroundings. After remaining a few weeks she disappeared, and when next heard of was plying her old trade on the Washington and Norfolk boats, and was much more prosperous than before because of the refinements she had acquired during her association with respectable people.

The only patient who showed any appreciation whatsoever of the treatment received was a colored woman who was suffering acutely from her disease.

For the most part the women believed that they were the victims of circumstance in being brought to the hospital. They revealed not the slightest interest in the diseases with which they were infected, and no amount of information or persuasion could change their attitude. They took their treatments willingly because their release was gained thereby, but seldom overlooked an opportunity to escape during the period of treatment. They gave free expression to their ideas of the injustice to which they were being subjected because others whom they believed far more deserving of isolation remained unapprehended. They were loud in their assertions that they would give Newport News a wide berth in the future, and that they would warn their associates of the horrors which they had experienced.

All but two of the white women are believed to have left Newport News immediately and permanently after their discharge from the hospital. The two white women who remained in town, together with twenty-three colored women, were again apprehended and admitted to the hospital a second time with new infections.

In the adaptation of the control of venereal diseases from a war-time to a peace-time basis, it is believed that the detention hospital for women is an absolute essential, and that upon its development and maintenance will be found to rest the ultimate solution of the venereal disease problem. By no other means can infected immoral women be prevented from spreading disease while under treatment, and by no other means can gonorrheal patients at least be rendered actually noninfectious.

A period of treatment lasting only a few months is of doubtful efficacy, and serves only to embitter the patient without in any way detracting from her intention of again resorting to prostitution immediately upon her release from the hospital. It is believed that the period of detention and treatment should be extended for a period lasting from one to four years, thus allowing time for more definite results as to treatment and affording an opportunity for rehabilitation. In cases where the mentality is so low as to preclude the possibility of a life other than one of prostitution, it would be an economy and a humanitarian act to commit such individuals to institutional care for life. They are a far greater menace to the happiness and welfare of society than many murderers who are serving life sentences in our prisons.

Venereal diseases can never be controlled by isolating the carrier for a fleeting interval, then turning her loose to become a carrier again, and continuing the vicious circle *ad infinitum*. The detention hospital then will probably become a farm where a large proportion of the inmates will be able to indulge in a healthful occupation and render the institution at least partially self-supporting.

The cost of the detention hospital is the most serious obstacle in the path of its development. Few communities are willing, if indeed they are able, to maintain such an institution. It is freely admitted, therefore, that Federal aid in the establishment and maintenance of detention hospitals for women will be necessary for a considerable time to come. Detention hospitals not adequately equipped and provided with proper facilities to accomplish the work at hand are worse than none. Jails when used for hospital purposes are an abomination, and serve only further to degrade and debase the poor unfortunates who come within their confines.

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SAFETY FACTORS IN THE TEAM WORK OF OPERATOR AND ANESTHETIST.*

BY

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"There is nothing new under the sun" is an old and true adage. While new things may arise, there are often new applications for old things. I beg leave to ask your indulgence if the thoughts expressed in this paper are not entirely new. The purpose is chiefly to emphasize and lay special stress on ideas and facts already known, but not sufficiently heeded by all who should notice them. A mere perusal of the title of this paper suggests the presence of danger. How fortunate that we should live in an age that makes use of the slogan "Safety First!" The railroads have their "Stop, Look, and Listen" signs. We have received the admonition or noticed the sign of "Watch your Step;" the streets of the cities have their traffic officers or signs "Keep to the Right;" shops have been compelled by law to safeguard all machinery. In short, in civil life it has become not alone a necessity, but a habit to safeguard life where there is any possible danger. Have we, as members of the medical profession, taken all the precautions we should have taken? To this we may answer "Yes" or "No." Inasmuch as this paper deals only with operator and anesthetist, the remarks will apply only to them. Surgery, properly considered, is a therapeutic procedure. There is always an element of danger in connection with it, even though a general anesthetic is not administered. The dangers attending surgery and anesthesia have, in great part, been recognized. Much has been done to overcome and prevent them, and investigations are continued to prevent and minimize those dangers which have not yet been conquered. We are all proud to note the safety signs which have thus far been erected to guide surgeon and anesthetist, in order that the surgical patient may have a safe journey to relief and eventual cure.

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* Read as part of a Symposium on the Administration of Anesthetics in Obstetrics, Gynecology and Abdominal Surgery at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

To those who have given thought to the matter of safety, there always arises the short-sightedness of our medical colleges in not properly training the medical student in these branches. We appreciate that an anesthetic is administered to allay pain and overcome muscular contractions. The fundamental teaching of this art, as Flagg calls it, must come from the medical school. Dr. Isabel Herb, in her paper, "The Anesthetist in the Hospital Staff," says: "The slogan to be adopted, the safety device to prevent anesthetic deaths, is education." Dr. W. D. Gatch, in his paper, "Anesthesia in Curriculum and Clinic," very forcibly portrays the defects in teaching. He suggests a co-relation of the subjects so that there is a very forceful application of the subject of anesthesia in conjunction with physiology, pharmacology, internal medicine, and operative surgery. As Gatch further says: "Where would the advances in surgery be if it were not for the advances in anesthesia?"

The surgeon requires education just as much as the anesthetist. The real surgeon seeks intensive training under an able leader before he branches out for himself. The question is not only how well an operation may be performed, but, also, how much good will come from the operation. The proper training of both operator and anesthetist, and the working together of both will terminate in good team work and better surgical results.

One can state with perfect safety that team work in surgery has decided advantages. It is, indeed, no longer an experiment, but rather a well-established fact. Encouragement is given the anesthetist, who, being recognized as a full-fledged specialist, takes his place in the surgical team, not alone as the one who administers the anesthetic, but as a consultant. His help weighs in the balance the advisability of operating and the selection of the safest time to operate, and it is he who makes the choice of the anesthetic. He helps prepare the patient for operation. To do all this, the anesthetist must be a trained physician.

The object of a trained surgical team is not alone to prevent death, but to overcome and minimize the discomforts attending surgical operations. This manner of work has brought about specialization in anesthesia, and, in turn, encourages further study toward new and hidden paths that would otherwise remain unknown.

We cannot, to-day, overlook the fact that meetings of this kind, where two or more special branches of medicine come together in joint session, must bring benefit to all concerned. They should be encouraged, because in such joint sessions the shortcomings of all may be brought out and remedies suggested. This will exemplify the old saying: "Always speak well of yourself; the other fellow will take care of your faults."

As has been stated before, the duty of the anesthetist is not merely to administer the anesthetic, but to help prepare the patient for the operation. When should he begin, and what preparation is needed? If possible, the anesthetist should begin his work when the surgeon has decided that an operation is needed. It is advisable to have the patient in the hospital at least forty-eight hours before the operation. Some cases may require several days, others a number of weeks, for proper preparation. A full physical examination of the patient is advisable. In connection with this there should be a quantitative and qualitative examination of the urine. When possible, a functional test should be made. The examination of acetone before operation is too often neglected. It should be a routine practice. A complete blood examination, including the clotting time, should be made. While it is perhaps rare to find delayed clotting of the blood, we may save ourselves considerable anxiety if this test is made before the operation. The works of McKesson, Miller, and others on "Blood Pressure" show the great importance of this valuable, but too-often-neglected examination. The work of Polak on "Blood Pressure and Phthalein Output" shows very conclusively a *safety first* sign, if properly heeded. All these examinations are mentioned, not for the purpose of creating a mountainous obstacle to surgery, but merely to indicate some of the *safety signs* that, when heeded, will spell success to the surgeon and gain the best end-results for the patient.

At this point, let me speak a word in favor of the great work done in the clinical laboratory. Too little use is made of this in our preoperative preparation of the patient. One of the most trying and obstinate discomforts encountered at times is acidosis. The laboratory will be of great help to us in this condition and proper diet and medication will overcome or mitigate this condition to such an extent that surgery may be undertaken with perfect safety. The laboratory work in diabetic cases is of inestimable value.

Argument is often raised against this preliminary stay in the hospital on the basis that, owing to the great nervousness of the patient, it would cause an unfavorable reaction. This fact is true, if no explanation is given the patient why this extra time is needed. Too much thinking is too often done for the patient, and not enough by the patient. Outside of the great good that accrues to the patient by these examinations, there are other benefits to be derived from them; viz., becoming accustomed to the hospital, and forming an agreeable acquaintance with the nurse who is to have charge of the case.

Especially in genitourinary surgery does this preoperative care and preparation of the patient show up to the best advantage. Without this preoperative care, some patients were formerly doomed to die without operation; with it, they are now rendered fit subjects for surgery, obtain relief, and, not infrequently, are cured. At any rate, comfort is given to patients who formerly were destined to untold suffering. Another great advance in preoperative preparation is the care given the gastrointestinal tract. The surgical patient is no longer starved and purged. How true the comparison of the surgical patient to the athlete who prepares himself for a race! Let common sense prevail. The better the physical condition of the patient at the time of operation, the shorter and more uneventful will be the convalescence. Giving the patient the usual diet the day before the operation, supplemented, as suggested by Flagg, with one-half pound of chocolate, or some other form of glucose, will help to neutralize the acidosis produced by the anesthetic. Purging or active catharsis is not only useless, but is one of the great causes of postoperative gas pains and distention of the bowels. Our emergency cases, where preparation is impossible, seldom suffer gas pains. The patient should have ample rest before the operation. If necessary, some sedative, like bromide, chloretone, or veronal, should be given the night before the operation to secure a good night's sleep.

Shall we administer preoperative medication? While there is a great deal of argument against it, I believe there is much to be said in favor of it. For a long time it has been my rule to use preliminary medication in the majority of cases. When I use it, I give morphine 1/6 grain, or pantopon 1/3 grain, with atropine 1/150 grain in ether cases, and hyoscine 1/150 grain, in gas-oxygen cases. While occasionally I have seen a slowing of the respiration, due to the morphine, I have never regretted its use in a single instance. The value of the administration of morphine or pantopon, both before and after operation, is too little appreciated. There may be a marked disadvantage with inexperienced anesthetists when this preoperative medication is used; but with the experienced anesthetist, who relies on no one sign or symptom to indicate the condition of the patient, there can be no disadvantage. If there is an idiosyncrasy, or known contraindication, no preliminary narcotic medication is used. The length and type of the operation are also influenced by preoperative treatment. Of late, my choice has been to employ the medication sublingually, rather than hypodermatically. The action of the medicine is fully as good, and the psychic effect on the patient is very marked and in favor of the patient.

The next thought after proper preparation of the patient and fixing the time for operation, will be the choice of the anesthetic. It is really surprising to read and hear the differences of opinion as to the best anesthetic. Statistics are of no assistance to us. It seems that certain sections of the country have fads and fancies in the choice of anesthetics. It is true that all anesthetic agents are poisons; it is also true that only experienced physicians should administer anesthetics. We know that ether anesthesia is the safest with the inexperienced. The experienced anesthetist adds safety to nitrous oxide and oxygen. The latter anesthetic is the most pleasant and has the least postoperative effects. Those who use gas oxygen to any extent agree that there are practically no contraindications to its use. A short time ago, I read a paper in which the chief contraindication to gas oxygen was shown to be the surgeon. That still holds true when the surgeon is not accustomed to work with gas oxygen anesthesia. The surgeon who has been in the habit of working with the patient under deep ether anesthesia must first be taught to operate with the aid of gas oxygen to recognize its real value. It means a re-education of the surgeon. Once accustomed to the use of gas oxygen, he will work with as much ease and comfort as he ever did with ether. The appealing factor in this change is the patient. One always hears how pleasant it is to go under the influence of gas oxygen, and how pleasant is the awakening. The surgeon is surprised at the good condition of the patient, even after a long operation. It is conceded that there is not the amount of muscular relaxation with gas oxygen as there is with ether. In a certain class of cases only a small amount of ether may be necessary to produce the desired amount of relaxation. The The success lies in the team work between operator and anesthetist. The greatest objections of gas oxygen anesthesia are made in abdominal surgery, because of lack of muscular relaxation. In great part this will be overcome if the operator will make a sufficiently large incision to begin with, so that he can make all necessary examinations without the use of great force in inserting his hand into the abdomen. The position of the patient on the operating table, to insure the greatest amount of relaxation of the involved parts, is another feature of importance. Guthrie and others have commented favorably on the use of the Trendelenburg position when starting the anesthetic. This has its advantages in certain cases. Still, there is greater danger in extreme Trendelenburg position, especially in a long-continued operation. Here good judgment on part of the operator is necessary to determine how much and how long the Trendelenburg position will be tolerated by the patient. Proper relaxation of the parts involved may be obtained by properly placing pillows, or sandbags, under the patient. The newer type of operating table is so constructed that relaxation may be accomplished by adjustment.

The one great field that is surely but slowly being invaded by the gas oxygen method on anesthesia is obstetrics. Chloroform has done noble work in this department, and will never be entirely displaced by gas oxygen or any other anesthetic. Chloroform is a very valuable anesthetic agent when carefully used in properly selected cases. Ether will, of necessity, be the agent most extensively employed. Ether has its definite indications, and in many cases its advantages over other anesthetics are clear and undeniable. The difference in cost, no doubt, has been a drawback to the more liberal use of nitrous oxide. Greater experience has thus been gained with ether, which, when properly administered, compares quite favorably with gas oxygen.

Somnoform, which is a combination of ethyl chloride, methyl chloride, and ethyl bromide, is extensively used by dentists. It is of great value in short administrations, and produces greater relaxation than gas oxygen. This combination of drugs is also largely used to begin ether anesthesia. It has the further advantage in not requiring a large apparatus for administration. Ethyl chloride has enthusiastic advocates, as have also ether and gas. Its chief use is for short operations, or as a preliminary to ether anesthesia, especially in children.

The use of oxygen with other anesthetics is of great value. It increases safety without diminishing the value of the anesthetic. It is a stabilizer of blood pressure, it diminishes or overcomes nausea and vomiting, and it facilitates an early return to consciousness. In obstetrics, I have found it of great value in resuscitating the asphyxiated child.

Emergencies are best met when there is team work. It may be necessary, in some cases, to transfuse before operation. The experienced anesthetist can give warning to the operator in ample time to speed the operation, or even cease his work, if the patient's condition becomes threatening. If blood pressure observations are taken during the operation, one will find the evidence of danger long before it manifests itself, and proper measures may be taken to meet it successfully. The anesthetist should know all emergency measures and have them ready for use when occasion demands. The operator, too, should at all times use such speed as is consistent with safety and good technic. All bleeding should be controlled at once. Unnecessary bruising of tissues should be avoided. Surgical shock is a nightmare that, as yet, has not been fully dispelled. The theory of Cannon that it is due to absorbed toxins arising from the bruised tissues, may explain why operations of long duration and severe manipulations are followed by shock. We know that hemorrhage and nerve irritation are causes of shock; but there are some cases of shock that have not, as yet, been satisfactorily explained. No doubt further investigation will, eventually, solve this problem. In the meantime it behooves us to consider all the supposed causes of shock, and try to avoid them.

What care, then, is to be given the patient after the operation? The patient, properly protected, is taken back to a warm bed. Hot water bottles should be placed about the patient to keep up the body heat. The room should be light enough so that changes in the color of the patient can be recognized. The position of the patient in the bed should be such as to afford the greatest comfort. Enough anodyne should be ordered to give relief from pain for the first forty-eight hours. Water should be given as soon as consciousness is fully established. Recital injection of alkaline situations, with or without glucose, should be ordered if the case demands them. Feeding should be started at a very early period. Careful watching of the patient is necessary to detect change in color and in pulse rate. Absolute quiet is essential for the first few days.

If the anesthetic has been properly administered, a very early return to consciousness usually takes place. This means that there is a minimum amount of anesthetic for climination. Less time will be required in watching the return of consciousness, and the discomforts attending it will be practically nil.

In conclusion, I wish to emphasize, first: a change in college curriculum to meet the above suggested requirements; second: a greater preoperative care and examination of patients; third: improved team work in our hospitals.

In limiting my remarks to operator and anesthetist, I do not wish to minimize the value of other participants in the operation. There must be a concerted action of all of them in order to insure success.

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SOME ADJUNCTS WHICH PROMOTE EFFICIENCY IN THE USE OF LOCAL ANESTHESIA.*

BY

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(With five illustrations.)

NOTWITHSTANDING the boon that the discovery of general anesthesia has been to surgery, chloroform, ether, and gas have so many shortcomings and dangers, both immediate and remote, and their use is accompanied by so much discomfort to the patient, that local anesthesia is gradually gaining in popularity. In considering the problem of anesthesia, it is evident, however, that the ideal method has not yet been developed. The virtues of any anesthetic are purely relative.

All general anesthetics produce their toxic effects almost directly in proportion to the amount used and to a large extent the quantity used depends upon the length of time during which the patient is under their influence. While this point is not of special importance in a large percentage of cases, there still remains a fair number in which it is of the utmost importance; a fact which, I think, is not sufficiently appreciated. It is difficult to decide, in a given case, just what part a heavy dose of a general anesthetic has played in an untoward result following a major surgical procedure.

The future will develop a great improvement upon the present method of producing general surgical anesthesia; and local anesthesia is making marked encroachment upon the field. My personal point of view has changed from year to year, increasing experience having invariably broadened the scope of local anesthesia and decreased the field of general anesthesia, even where it was believed absolutely necessary. In this, with few exceptions, my experience has not varied from that of others who have used local anesthesia in a fair percentage of their cases. Increasing experience has made it possible for me to perform, with satisfaction, operations which I formerly believed to belong solely in the field of general anesthesia. Little difficulties have gradually been overcome by methods devised to meet them, with the result that I have been repeatedly compelled to modify my attitude on this subject.

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

It is with a discussion of the possible scope of local anesthesia and some of the methods which facilitate its use, that this paper will concern itself. The scope of local anesthesia will depend largely upon the surgeon's attitude, which, in turn, is a fair index of his ability to use the method. The personal equation enters so largely into a consideration of the problem that one can give only his own experience and impressions.

I have arranged my cases in the five following classes: 1. Ideal. 2. Satisfactory. 3. Unsatisfactory. 4. Failures. 5. Mixed cases.

First Class.—In this class we have included only those cases in which the operation was completed without complaint on the part of the patient, and in which, in my judgment, the anesthesia established permitted the performance of the operation as satisfactorily as could have been done under any other form of anesthesia.

Second Class.—In this class we have placed operations in which the anesthesia was good, but in which the patient complained at times, or suffered some inconvenience. Although, in my judgment, the patient was not caused appreciable pain, he failed to go through the operation without complaint. No patient was placed in this class unless the operation was performed with as great as or greater satisfaction than would have been the case with any anesthetic.

Third Class.—Here we have selected those cases in which the operation was completed under local anesthesia, but in which, for some reason, we should consider some other form of anesthesia more desirable.

Fourth Class.—This class consists of those cases in which it was necessary to resort to general anesthesia in order to complete the operation, either because the patient complained of pain, or because general anesthesia was necessary in order to carry out some part of the operative procedure.

Fifth Class.—In this class belong the cases in which the use of general anesthesia had been anticipated, or planned, and in which only a certain portion of the operation was intended to be carried out under local anesthesia.

The record of the last 600 major operations which I have performed serves as a fair index of my present attitude regarding the scope of local anesthesia.

REPORT OF LAST 600 CASES.

		Per cent.
Number begun under general anesthesia.....	49 cases	8.17
Number begun under local anesthesia.......	551 cases	91.83
Cases falling in class one (ideal)............	383 cases	69.50
Cases falling in class two (satisfactory)......	114 cases	20.80
Cases falling in class three (unsatisfactory)...	36 cases	6.50
Cases falling in class four (failures)..........	7 cases	2.10
Cases falling in class five (mixed anesthesia).	11 cases	2.00

Elements which havelargely influenced me in assuming my present attitude may be enumerated as follows: first; a realization that liberal amounts of novocain can be used if properly safeguarded; second; the development of an improved armamentarium; third; the development of a morale on the part of my assistants and the hospital attachês which, together with the gradual education of my clientelê, greatly influenced the mental attitude of prospective patients; fourth; an improvement in the method of handling the tissues.

At the present, all of our operations are begun under local anesthesia, with the exception of cases in which it would be obviously impossible to control the condition by this method. As may be seen by the above table, this amounts, approximately to 7 per cent. and is confined largely to work about the face and mouth in children, and to adults who refuse a general anesthetic.

While local anesthesia has many shortcomings, because certain operations cannot be carried out under its use and certain patients will not submit to it, it is my belief that faulty technic is responsible for the vast majority of failures. Take, for example, a simple laparotomy for the removal of the appendix or shortening of the round ligaments; a perfect local anesthesia will allow us to complete either operation without touching the viscera within the pelvis, except where it is necessary to attack the round ligaments and cecum. No gauze is necessary for packing off the intestines and all pelvic viscera may be examined as at an autopsy. On the other hand, an incomplete local anesthesia on the same kind of cases will give an entirely different picture. The patient, who is repeatedly hurt during the injection or perhaps has an incomplete infiltration, leaving sensitive areas in the field of operation, will develop in the abdominal wall reflexes over which he has no control and this condition will cause the forcible extrusion of the intestines through the wound as soon as the incision is made. In order to retain the intestines within the abdominal cavity in such cases, pressure by gauze pads is necessary. This in turn produces more pain, which increases the combative action on the part of the abdominal muscles. We have here a "vicious circle," which spells failure for the method in practically every case. The individual who blames local anesthesia or the mental attitude of the patient, for this condition can be classified in only one category by those who know what the actual cause of the trouble is; and yet this is what one usually observes when attempts are made to perform laparotomies by this method.

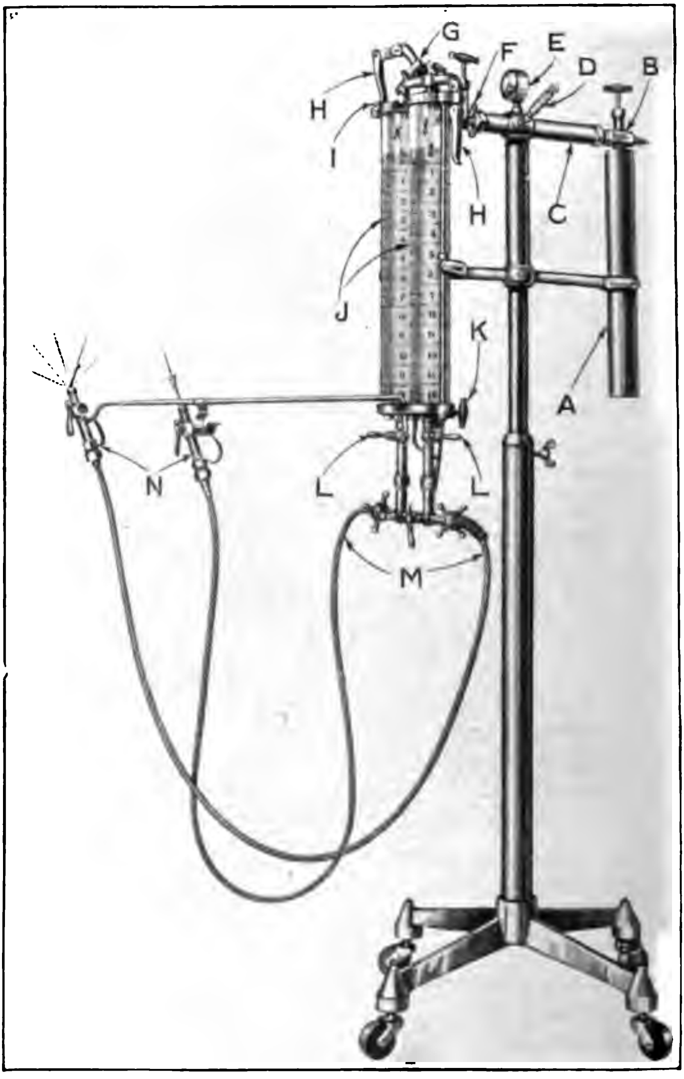

FIG. 1.—Pneumatic injector for use in introducing local anesthesia.

The ideal sought is a complete abolition of the reflexes of the abdominal wall, with complete relaxation, and a negative intra-abdominal pressure, like that seen at an autopsy. This is accomplished by a perfect anesthetization of the line of incision, painlessly produced, and gentle vertical retraction of the abdominal wall. Exposure of the viscera is facilitated by the use of the Trendelenburg position, lateral tilting, etc.

To my mind, the most important point is the careful introduction of the drug; and it is in the attention to small details that success is achieved. All of the modern text-books or articles on local anesthesia advocate the introduction of the needle at two or more unanesthetized points on the abdominal wall. This entirely unnecessary procedure is apt to disturb the patient at the very beginning and to shake his confidence in the operator, which may not be any too great at best. On the other hand, if the patient is hurt but once, as in making the first dermal wheal and the future sites for the introduction of the needle are anesthetized from beneath the anesthetic may be introduced almost without being felt. Syringes, on account of their jerky action and the muscular effort required on the part of the operator, have been found unsatisfactory for the accomplishment of smooth and perfect work. Even the

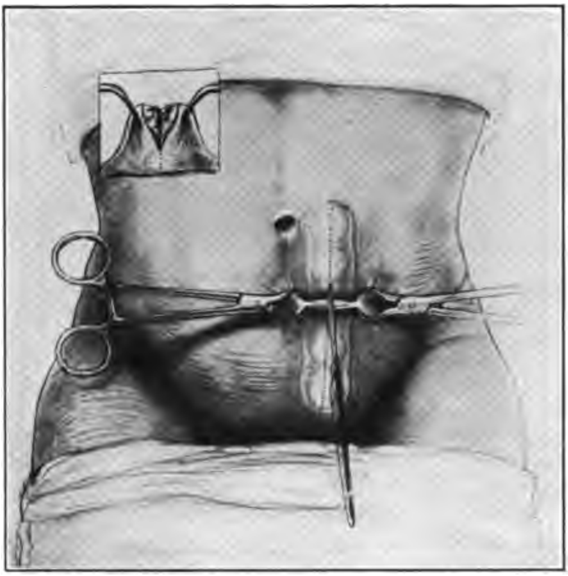

FIG. 2.—Towel clips applied to skin while making incision.

improved syringe, which eliminates the necessity of refilling, does not give one the opportunity of carefully disseminating the solution into the tissues. The pneumatic injector, which we have used for ten years, gives one the greatest opportunity for easy and painless infiltration of the tissues (Fig. 1).

Once the anesthesia is established, the incision should be made with a sharp instrument, preferably between two towel clips which elevate the skin and prevent pressure upon the abdominal viscera (see Fig. 2).

During the making of the incision this skin elevation should be continued without intermission and as soon as the peritoneum is opened, all the abdominal viscera will drop away from the site of the incision, provided the anesthesia is perfect (Fig. 3). A Trendelenburg position, with lateral tilting, will expose any organ in the lower abdomen. In the upper abdomen the entire stomach, gall-bladder, duodenum, liver, and colon may be examined visually as well as digitally. The patient can of his own volition show the gall-bladder or stomach to the onlookers by an expulsive effort; and, by opening the mouth and relaxing, can allow these organs again to drop back into the abdomen. It is desirable to substitute suction for sponging. Abdominal packs are used only when there is danger of soiling; the packs are simply laid upon the viscera, and not forced with great pressure against the serous-coated organs, as is so commonly practised when the patient is under general anesthesia.

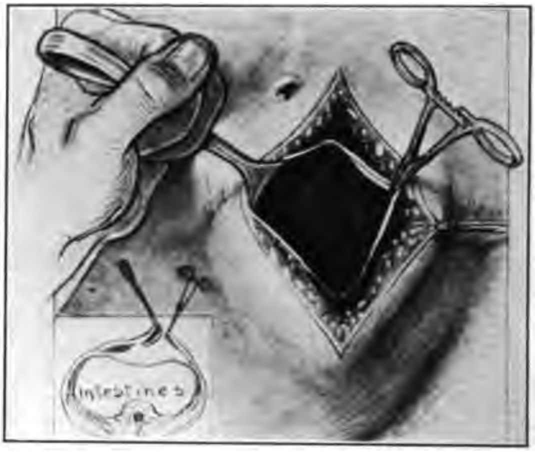

FIG. 3.—Showing vertical retraction of abdominal wall—see especially cross-section in lower right hand corner.

TECHNIC.

In all of my abdominal work, except in the operation for inguinal hernia, a direct infiltration of the tissues is effected and the complete infiltration of the abdominal wall is made before the incision is begun (Fig. 4). This method is chosen because of its efficiency, simplicity, accuracy, and speed. This direct method is not used in the case of inguinal hernia because the infiltration of the tissues obscures, to some extent, their anatomical relations.

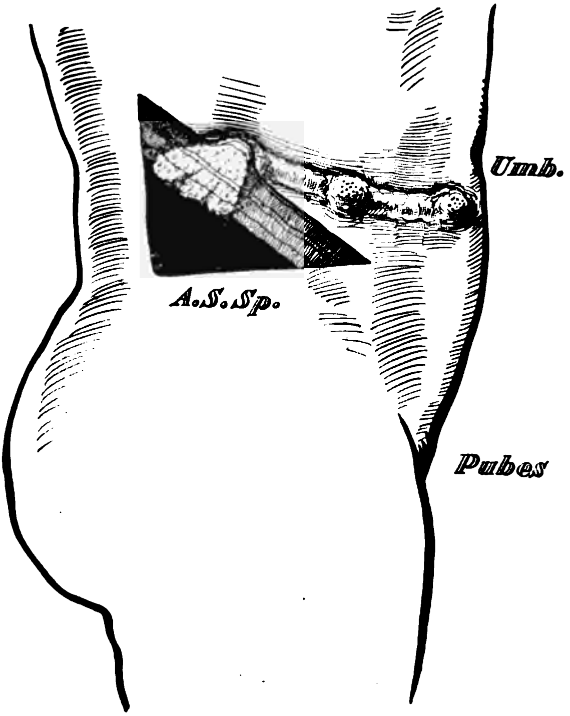

FIG. 4.—Section of abdominal wall, showing area infiltrated.

Visiting surgeons frequently inquire regarding the danger of introducing the needle directly through the abdominal wall and injuring the abdominal viscera. This danger is practically *nil*, as has been proved in thousands of instances in human as well as animal surgery. If the needle is advanced slowly, and a stream of the solution is constantly forced ahead of the needle point, the peritoneum will seldom be penetrated. This point has been proved by using solutions colored with methylene blue.

Once the abdomen is open, vertical retraction, tilting, and careful manipulation of the tissues are the main strategic points. Sensitive visceral surfaces, such as are found in the round ligaments, the mesoappendix, about the uterine cervix, the ovarian pedicles, and the cystic duct of the gall-bladder may be anesthetized before being attacked. Long, fine needles, mounted upon the ball-and-socket joint of the cut-off as shown in Fig. 5, should be used where one wishes to make infiltrations deep within the abdomen and the hand does not obscure the view. Suction is substituted for sponging, which may cause a disagreeable sensation. Where traction on the pelvic viscera is anticipated, as in the case of bad infections or malignancy, caudal anesthesia precedes the infiltration of the abdominal wall.

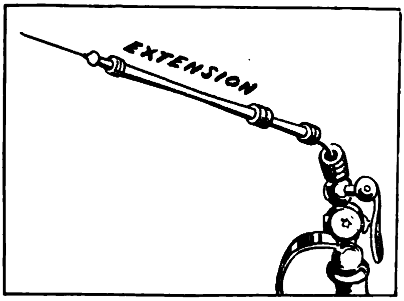

FIG. 5.—Shows extension attached to cut-off for use in deep cavities.

Vicious, forcible retraction is to be condemned. In this work we employ a wire automatic retractor. I believe that visual examination of the abdominal organs is much more advantageous than digital. Extensive abdominal operations performed under local anesthesia, if done painlessly, usually show a patient with a pulse rate below 80, no sweating, normal respiration, color, and temperature, and an unchanged blood pressure at the end of the operation. The elimination of trauma to the abdominal wall and viscera insures, almost without exception, a smoother convalescence than I have been able to obtain under the use of general anesthesia. My experience leads me to believe that postoperative ileus and gas pains are, in the absence of infection, directly proportionate to the amount of trauma employed during the operation. Nausea, thirst, and vomiting, with their disagreeableness and annoying sequlæ of wound strain and pain, are largely eliminated.

When one is operating upon children under local anesthesia, restraint is necessary while the anesthetic is being introduced, which may be employed without in any way interfering with the technic of the operation. My experience in more than 100 operations, performed on children under the age of fifteen, shows that the restraint necessary is, probably, less than 10 per cent. of that required during the administration of a general anesthetic, and that this class of patients lend themselves exceptionally well to this form of anesthesia.

2524 CLINTON AVENUE.

SURGICAL BARRAGE.*

BY

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AND

ELMER I. McKESSON, M. D.,

Toledo, Ohio.

(With one illustration.)

THE greatest protective development in modern warfare was the so-called "barrage." To be effective, every minute detail was worked out with the greatest precision. To begin a few seconds too early or too late meant not only a possible failure, but even worse, destruction of one part of an army by another part of the same army. Team work was absolutely essential.

A surgical barrage may be defined as the process of surrounding the surgical patient with all the skill and refinement known to specialists in the various departments of medicine and surgery during the preoperative, operative, and postoperative periods. Surrounded with such a barrage, the patient may reasonably anticipate the lowest possible mortality rate, with the shortest and least uncomfortable morbidity period, the latter factor becoming more and more the aim of every thoughtful surgeon. It is our hope briefly, yet concisely, to bring before you certain of the elements making up this barrage, basing our conclusions not upon theory, but upon experience.

First of all, we have already noticed a marked advance in the safety line to the patient by the work started by the American College of Surgeons in the standardization of hospitals. This not only means a general awakening of hospital managements, thereby increasing the efficiency of the hospital, but is destined to have an enormous influence in standardizing surgery itself. Hospital managements, when selecting a staff, are beginning to give occasional thoughts to some qualifications other than a reckoning of the number of pay patients the proposed member has been rushing to the hospital. It is to be regretted that, in the past, the latter motive has all too frequently actuated the selection of staff members by many institutions, especially those of a sectarian type.

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

We regret, however, that the officers of the College have apparently overlooked one important factor in their otherwise valuable standardization work, and in a few instances have even given their individual influence to lowering of standards. We refer to professional anesthesia, which we shall discuss farther along in the paper.

In the field of gynecology, much is gained for the patient, as well as for the profession, by a close alliance of surgeon and psychiatrist. The patient has been taught many foolish and untrue things about herself, and the relations of her sex organs to the entire endocrine system as well as to the nervous system are so complex that frequent consultations with a properly trained neurologist will often avoid useless and even harmful surgery.

The gynecologist probably comes into contact with a higher percentage of chronically ill patients than does any other surgeon. He must therefore consider with unusual care the preoperative and postoperative periods. Everything possible must be done to raise the patient's physical condition to the highest point of resistance, and her psychology must receive special attention. She should reach the hospital and be received, whenever possible, without an unpleasant experience. Immediate preoperative purgation is to be avoided. Fluids, especially alkalines, are given freely. A good night's rest is assured by the use of sedatives, and, if absolutely necessary, some narcotic.

We assume that a positive diagnosis has been made, if such is a human possibility, and the work well planned before the hour of operating. This bespeaks smooth, rapid surgery, without bungling haste. All known means should be used to measure the patient's resistance, including carefully acquired knowledge of the kidney function and cardiovascular system, as well as metabolism in general. We still continue to attribute much importance to the pulse pressure ratio, a term used to indicate the relation between the pulse pressure and the diastolic pressure, which we discussed at length in a former paper read before this society.

We have made systematic use of the principle ever since that time, just as we did for some years previous to the report. All cases are recorded, and the records comprise most interesting data for study. Dr. Miller, of Providence, R. I., has recently reported, a trial of our plan in 1000 consecutive cases, and stated that he has found it correct and of much value. In the same article, Dr. Miller puts forth an idea that we have adopted and have found to have much to commend it. He divides his cases into three classes, as follows:

The good risks: patients free from organic disease, whose surgical condition is not likely to prove fatal.

The fair risks: patients who are suffering from organic disease, but whose surgical condition is not especially serious.

The poor risks: patients whose surgical condition is so serious, or so far advanced, as likely to result in a fatality.

All patients of the first class are expected to recover. If a fatality should occur from among this class, the case should be carefully investigated to determine whether the preoperative prognosis was in error, or whether the work of the surgical team is to blame for the fatality.

As an example of the second class, an operation for appendicitis might be urgently required in the case of a patient whom the examination showed to be affected with diabetes. If coma and death follow an operation under such circumstances, the fatality must be considered beyond human control. If no examination and no prognosis had been made in a case of this kind, the necessity for a lame explanation of the result would have arisen.

With this classification we are now ready to consider the question of anesthesia. Shall it be local or general? If the latter, what agent is to be used? Any surgeon who insists that there is but one form of anesthesia, or only one anesthetic, is too narrow to be a real student. If one classifies his patients as above, and seriously considers the sort of an operation he is going to perform, he will soon find need of several forms of anesthesia and several anesthetic agents.

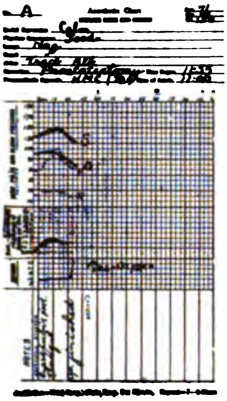
It is not our purpose to discuss at this time the question of local anesthesia; but before passing it, we wish it to be understood that, in our judgment, it may be used in the future much more than it has been in the past, owing to great improvement in the technic of its administration. Personally, if I were without the services of a professional anesthetist who was especially skilled in the use of nitrous oxide-oxygen, I would do a larger percentage of my work under local anesthesia.

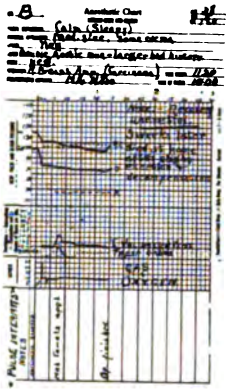
Ether has practically solved the question of immediate mortality rate when properly administered, and is certainly the safest general anesthetic agent in unskilled hands. It also makes toward easy surgery. There are a few factors about it, however, that do not please the surgeon who is looking for ideal anesthesia. The odor from it during, as well as following, the operation does not leave pleasant memories in the mind of the patient. The awful nausea, the interference with the function of cells and organs as proved by the laboratory, delayed deaths—not conscientiously attributable to the surgical traumatism alone—are things we like to avoid.

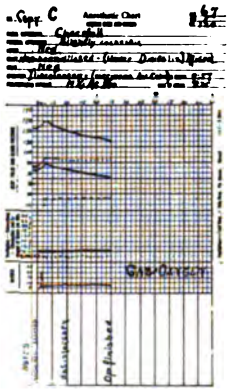
In 1907 we became interested in nitrous oxid-oxygen. At first our difficulties were many, ignorance of the necessity of joint study and coöperation between surgeon and professional anesthetist, poorly devised equipment for administration, lack of experience in the signs of anesthesia produced by this agent, lack of ability on my own part to operate with minimum traumatism being the principal causes in the light of present knowledge. With these propositions mastered, I am to-day happy in the conscious enjoyment of a technic which leaves little to be desired. However, the kind of anesthesia and the agent used to procure it are secondary in importance to that of the anesthetist. Indeed, we believe a professional anesthetist is the most important factor in the surgical barrage.

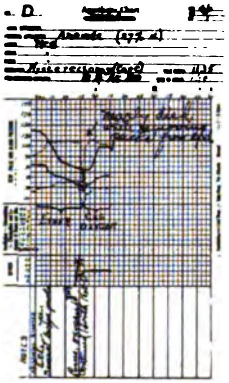
We have considered all the arguments ever offered in favor of the nonprofessional anesthetist, and, in times past, was inclined to admit that, in some of them, there existed a partial truth; but with our profession just home from the war, and such a good percentage of them ready to devote their lives to the study and practice of anesthesia, there now exists no reason why any surgeon who is *unselfishly* devoted to raising the standard of hospitals and surgery should encourage in any way nonprofessional anesthetists. All pro-arguments, when well-analyzed, fade away; and a new light upon the screen shows the real cause of the blustering arguments; viz.: "The surgeon in the big clinics was not happy in the thought of a fair fee going to a professional anesthetist. The surgeon in the smaller cities hoped to encourage the family physician to send him more cases by having him give the anesthetic." And it is quite probable that the surgeon has sometimes used the matter of anesthesia as an excuse to give the practitioner a fee somewhat larger than the skilled anesthetist would have charged the patient.

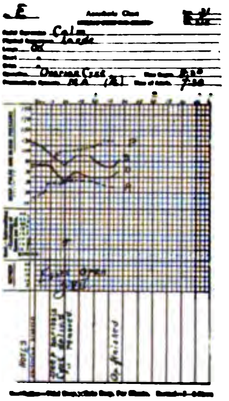
The question of the advisability of nurses administering anesthetics has recently been brought up before the profession. After an impartial study of the subject we have come to the conclusion that, while many nurses may be taught to administer the safer agents in uncomplicated cases in a manner highly satisfactory to the operator,

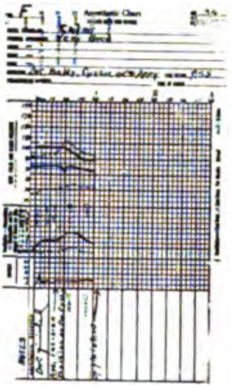












A.—Illustrates the physiological rise and fall (*S*) systolic and (*D*) diastolic blood pressures with the (*P*) pulse rate. Note that the respiration reacts similarly.

B.—Inability of an embarrassed heart to react to vascular depression shown by the initial fall in pressures *without* increased pulse rate. After an uneventful convalescence, the patient died three weeks later from heart decompensation brought on by walking up stairs.

C.—Mitral disease primarily—note abnormal pulse pressure or stroke unfitting the heart for long strains requiring greater circulating volume. Satisfactory convalescence.

D.—Shows the progressive development of cardio-vascular depression—first, second, and third degree—under ether narcosis and the added depressing influences of surgery, abdominal packs, etc., with collapse from removing abdominal packs at the greatest degree of depression necessitating resuscitation with oxygen, and continuation of narcosis with gas-oyxgen. Although the pulse remained rapid, the blood pressure gradually recovered so that the third degree depression was not continued until the vicious cycle was established. Patient recovered. The anemia alone should have precluded the use of ether in this case.

E.—Second degree depression. Large ovarian cyst requiring considerable traction and with the deep narcosis associated with respiratory and cardiac exhaustion from their excessive work are prominent features. During the last 15 minutes the patient had developed third degree depression but recovered—dangerously near the fatal period for third degree.

F.—Note the rise in pulse rate, respiration and ventilation with traction on the ovarian cyst while the diastolic notch warns of the slight (first degree) circulatory depression which follows. Not infrequently observed.

the principle is fundamentally wrong for reasons so numerous that we hesitate to embody them in this paper. We still maintain that the administration of a general anesthetic is the giving of the most powerful and dangerous drug at a most perilous moment of the patient's life. During any major operation the anesthetist may be called upon to make one or several new diagnoses and prognoses; and this, certainly, constitutes the practice of medicine and demands unusual skill.

Few surgeons know much about the subject of anesthesia because the subject has not been properly taught in our colleges and hospitals. Our hopes, therefore, lie in the encouragement we give the specialty of professional anesthetists. To them we must look for advances in their line. They must be considered in our discussions during the preoperative as well as the operative period. We commend the report of the Committee on Anesthesia of the American Medical Association stating: "Every hospital, certainly ever large hospital, should have as a regular member of its staff an attending anesthetist, whose authority in his special branch should be as complete as that of the attending surgeons in theirs."

What is meant by a qualified, professional anesthetist? For answer, we quote from Dr. Isabella C. Herb. "The qualified anesthetist is one who is capable of making a physical examination of the patient, who can interpret laboratory findings, who is familiar with operative requirements, and who is able to weigh the evidence and select the most suitable anesthetic and the method of its administration for the particular case under consideration. These qualifications require not only a thorogh medical education, but special training in the theory and practice of anesthesia as complete as is required in the field of surgery or its correlated specialties."

It was with extreme regret upon my part that upon the return from the war-ridden countries, we found the legislature of our own great state, Ohio, legalizing nonprofessional anesthesia. Already we hear the jeers of the nonmedical cults concerning the all too apparent insincerity of some of our leaders regarding their desire really to raise the standard of the medical profession.

Another factor of much importance to the patient is that of the length of time required for the operation. While we are not advocating bungling haste, it is certainly safe to conclude that the briefest possible time only should be utilized for any surgical procedure. All other factors being equal, the morbidity period should be in ratio to the operating period.

There is a certain period in every operation, varying in time in every case, that may be termed the *safety period*. The operator who knows anatomy and can operate easily with speed, will save the life of many border-line cases that would be lost by a slow operator who requires time far beyond that of the safety period.

I have had no experiences, either during my service in the Navy or in my private practice that have caused me to change my attitude upon the question of sutures. The suture material should be absorbable, of the smallest possible size necessary to carry out its function, and so prepared as to be absorbed as soon as its purpose has been attained.

The subject of shock is an important one, and should be considered in every abdominal section. Many brilliant discussions of the causes of shock are to be found in recent literature, and will not be reiterated here. I believe, however, that much practical good may be gained by keeping constantly in mind three factors: pathology, surgery, and anesthesia.

As cardiovascular depression is the outstanding symptom of the condition known as shock, it is logical to start with the proposition that whatever means enable us to determine the very beginning of this condition, are of the greatest importance.

When a cardiovascular system is reacting normally, an increased pulse rate is accompanied by increased systolic and diastolic blood pressures, and *vice versa*. The pulse pressure is, roughly, half as great as the diastolic pressure, and is the most direct evidence we have of the amplitude of the heart contraction, the best evidence of effective blood movement. In normal sleep, the pulse rate and blood pressures are lowered, but their normal relationships are maintained, so are they in an ideal anesthesia.

But during surgical operations, so many disturbing factors enter into the normal reaction of the circulation, that we may have many combinations with almost never a true *stimulation*, but very frequently a *depression* of the circulatory system. The changes occur frequently with varying, sometimes disastrous results. Nothing is more desirable than to be able to differentiate between these changes and to anticipate them.

There is no form of anesthesia, there is no age of patient, there is no type of operation in which one expects to see an elevation of blood pressure during the operation. Our fears are from low blood pressure, rapid pulse rate, and heart fatigue.

Circulatory depression or decompensation is best divided for surgical operation into three degrees:

1. Safe. Ten to 15 per cent. increase in pulse rate without change in pressure. Ten to 15 per cent. decrease in blood pressure without change in pulse rate.

2. Dangerous. Fifteen to 25 per cent. increase in pulse rate, with 15 to 25 per cent. decrease in blood pressure.

3. Fatal. Progressively increasing pulse rate above 100 with progressively falling blood pressure of 80 or less systolic, and 20 or less pulse pressure, for more than twenty minutes.

The first degree is never fatal; but it may gradually merge into the second degree. Beginning shock may be regarded as dangerous in the sense that it exhausts the heart and disarms it for defense against continued low blood pressure.

The second degree is always dangerous to the life of the patient. A vicious circle is established, consisting of the low blood pressure, the reduced heart nourishment, which, in turn still further reduces the blood pressure, and so on progressively. This usually develops within 20 minutes after the third degree depression occurs, and, when well established, proves fatal at once or, at most, within three days. The time in which shock proves fatal depends upon the cardiac muscle reserve and the effectiveness of the treatment employed.

Third degree depression may be present in a patient without the usual alarming signs, but after the vicious circle is established, evidences of shock become well marked.

The palpating finger, no matter how well educated cannot determine all the characteristics of the pulse or the pulse pressure with sufficient accuracy to be of much prognostic value as to the onset and degree of circulatory depression during a surgical operation.

Blood pressure and pulse determination taken every few minutes during all of the more serious operations, as well as in many of the so-called minor cases, are part of the duties of every anesthetist. The information regarding the patient's fitness for the operation, his reaction to certain procedures, and the immediate prognosis, can be gained in no other way with the same degree of accuracy.

The procedure is made convenient and easy by fastening the blood pressure cuff to the right arm and snugly binding the stethoscope below it with elastic webbing. Readings can then be made at will without disturbing sterile sheets and without losing the continuity of anesthesia.

A suitable graphic chart is preferable to a record because the tendencies of the circulation are readily compared from time to time;

and because the prognosis, based upon these tendencies and the character of operative work to follow, can be more accurately made.

Where nitrous oxid-oxygen was available in skilled hands, the war corroborated our previous observations that this form of narcosis is one of the best shock prophylactics we have.

It is not remarkable that nitrous oxid-oxygen should be safer in shock, and in preventing shock, than other anesthetics, when one recalls the fact that muscle cannot be paralyzed with it.

The greatest responsibility of the anesthetist is to avoid relative over-dosing of the patient in an effort to please the surgeon who may be demanding a flabby musculature.

The relaxation is not confined to straited muscles of the abdomen and extremities, but extends to the straited muscle in the heart. The effect is at once reflected by the pulse pressure and, if pushed too far, the diastolic is also decreased, showing the action upon smooth muscle as well.

The clinical study of blood pressure has convinced us that the final factor in shock is muscular exhaustion or an interference with muscular action. One thing is most apparent: the average patient, having been profoundly anesthetized for extreme relaxation, is half shocked, a second degree depression—and it often takes but little trauma to complete the picture of third degree depression.

We might go on discussing the relation of pathology, of surgery, and of anesthesia to circulatory depression, and nearly all I could say would be old and familiar to all. Yet it would be of no value to John Doe if blood pressure determinations were not made during his operation to check up the technic of every member of the operating team that no unnecessary damage be done to him. In other words, let us practice some of our knowledge in preventing shock.

We believe that there is a general knowledge of the advantage of professional anesthesia, and that this factor will soon be within the reach of the majority of good surgeons. If, added to this great aid, the surgeon considers well the psychology of the patient, avoids active preoperative purgation, keeps the patient warm, and has her well filled with fluid, discreetly uses morphine, understands the pathology before him, does rapid, bloodless, untraumatic surgery, he surrounds the patient with an effective barrage.

The postoperative period is characterized by the absence of meddlesome medication; by keeping the body warm and properly supplied with fluids, especially alkaline, and often by adding dextrose; by seeing that all wound dressings are exceedingly light and cool; by absolute quiet for infected and traumatized cases, while clean, abdominal, and pelvic cases should be moved about and gotten up much earlier than formerly. The opportunity offered the surgeon to benefit the patient by his advice and suggestions during this period should be used with much thought and intelligent discretion.

THE ADVANTAGES OF NITROUS OXID-OXYGEN IN LABOR.*

BY

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Childbirth should be looked forward to with pleasure and ought to be relieved of everything that carries an element of fear. If we wish to have a high-grade infant, we must have a quiet physical maternal mind. Women should not be forced to endure the agonizing pains of labor.

Recent literature informs us that over twenty thousand women die in the United States every year from preventable causes of childbirth and that hundreds of them are rendered invalids from the same cause. The nervous and physical exhaustion which has always come with motherhood in the past must be displaced by a sense of happiness which will fill the new mother's heart with joy and courage. To me it is a constant source of pleasure to see motherhood robbed of its terrors.

Statistics show that the number of stillbirths has been greatly reduced by the administration of continuous analgesia to the mother. The number of stillbirths in this country, in the cases of men who are using painless labor methods, is about 1½ per cent.; while under the old regime the average number of stillbirths seems to have been about 5 per cent.

Humanity demands relief from the tortures which characterize the old-time methods. The time has come when women will not endure needless suffering. We have at our disposal an ideal analgesic that will carry the woman through labor with little or no pain. She is spared the knowledge of agonizing pain, and she emerges at the end of labor with every vital energy intact and with no remembrance of suffering.

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

The use of nitrous oxid in obstetrics has come to stay. We are much better informed as to its application, and the laity are beginning to understand its virtues. In October, 1917, I wrote a paper, published in the *American Journal of Surgery*, on the results of the use of gas as an agent for the production of analgesia. Since then there seems to be a greater realization of its merits.

The administration of gas in all of our cases was done by our anesthetist. The technic is very simple, but it requires perfect team work on the part of the anesthetist and the obstetrician.

In the primipara the administration of gas is begun just about at the termination of the first stage of labor. In the multipara it is well to begin a little before the completion of the first stage. About three hours should be the limit in the administration of analgesia. Where a long tedious first stage is anticipated, much relief may be gained from the administration of scopolamin and morphin hypodermically.

The administration of gas is begun at the onset of a pain; if possible, before the contractions are fully realized by the patient. Instruct the patient to breathe deeply and quickly, and to raise her hand at the beginning of each pain. Failure to follow this rule militates very seriously against success. Some obtain a satisfactory degree of relief with three or four breaths, while others find it necessary to take more frequent inspirations. The percentage of gas used varies in different patients; but the administration of nitrous oxid alone should be permitted only when few breaths are necessary to produce analgesia. Oxygen may be added in varying quantities, but the average case does very well with from 5 to 10 per cent. Rebreathing should be avoided while the child is within the uterus. The patient should not be permitted to pass beyond the zone of analgesia. If this occurs, we lose the patient's coöperation. Avoid cyanosis at all times.

As the end of the second stage approaches, we permit a little more gas with each pain. In many instances the addition of a little ether, through the gas machine, promotes relaxation of the mother's soft parts; this condition makes it easy for the head, and delivery may be accomplished without danger to the perineum.

When the use of gas was first proposed as an agent for the production of analgesia, some thought its administration very simple, and that it could be safely administered by anyone. I was never of this opinion. Satisfactory analgesia requires skilled technic; it means an expert anesthetist. Defective analgesia is to be condemned; it discredits the procedure. I have had no experience with the method of so-called self-administration. I have seen it practiced in an Eastern hospital with gratifying results; but I still favor the expert administrator.

The administration of gas does not diminish the frequency or force of uterine contractions; in fact, as the pains of the second stage are so much subdued, we find the patient quite willing to make use of the accessory muscles of explusion. This is especially true of the more intelligent class of women; they understand that it will shorten labor. Nitrous oxid should always be selected for prolonged anesthesia.

Sir James Y. Simpson, in 1847, speaking in defense of painless labor, said: "Pain in excess is destructive, and even ultimately fatal, and the great pain accompanying parturition is no exception to this pathological law."

Simpson believed that the pain of childbirth could be lessened by anesthesia without interfering with the natural course of labor. He demonstrated this in 1847, when he delivered the first woman under the influence of an anesthetic. It was at this time that he began the use of chloroform, and for many years, and even at present, this anesthetic is almost exclusively used for this purpose.

Keep and Morton of Boston, and Dubois of Paris began the use of ether at this time. The first treatise on the advantages of chloroform appeared in 1854. In 1878, Pinard wrote upon "The Comparative Action of Chloroform, Opium, Morphin, and Chloral on Women in Labor." Chloral is of little value. Morphin is only an adjunct to other remedies. In Edgar's edition of Winckle's book on midwifery, 1890, we find observations which foreshadow our practice of to-day.

The lack of a proper apparatus and the careless selection of anesthetists are the cause of the failures attending, and fatalities following, the administration of nitrous oxid. It has been proved beyond reasonable doubt, that, when the gas is properly given, no ill effects occur to either mother or child. The systemic effect varies with the amount of nitrous oxid given. The blood pressure is only slightly increased, while the circulation of the blood and respiratory movements are rarely disturbed. This, of course, refers only to the analgesic stage. Quite recently I have seen it act as an antispasmodic in a very nervous primipara. The cases in which we observe disturbances of the cardiovascular function are those where the analgesic line has been passed.

What do we mean by analgesia? It is the loss of the sense of pain without the loss of the sense of touch and consciousness. It is brought about by the depression of pain perception; its intensity depends largely upon the amount of nitrous oxid administered. Patients always retain their mental faculties during the production of analgesia. Gas-oxygen is selected for labor cases, because the function of the voluntary and involuntary muscles remains intact. This condition guards against postpartum hemorrhage.

During the administration of the gas the fetal heart should be examined every half-hour. If nitrous oxid has been properly administered, the lying-in period runs a most favorable course, and everything points to a rapid convalescence.

The advantages of nitrous oxid over the so-called "twilight sleep" are:

1. A shorter second stage of labor during which the patient uses all her efforts to expel the child.
2. The relaxation of the mother's soft parts minimizes the dangers of perineal tears.
3. A total absence of restlessness and rigidity.
4. The rapid return to a normal state after the mask is removed.

Having used this analgesic for some years, I am enabled to offer five good reasons for its value:

1. The entire second stage is practically painless.
2. There is no exhaustion.
3. The postpartum psychoses are greatly lessened.
4. There are fewer lacerations of the mother's soft parts, especially of the perineum.
5. Healthy babies are delivered.

Convalescence is rapid; this, of course, depends to some extent upon the nature of the delivery. Involution takes place promptly, and the patient's recovery is uneventful. The function of the breasts is not disturbed by the use of gas-oxygen.

Ordinarily the patient takes gas-oxygen very readily. The uterine contractions push the head farther and farther down into and through the pelvis, and it is finally born without much pain. In fact, labor is in all respects normal. As a rule, the multipara, who has experienced the older methods of delivery, is better satisfied when delivered with the aid of gas-oxygen.

It is not good practice to begin narcosis early. It is better to explain to the patient what the term analgesia means. If this is done, you will find that the great majority of the patients will respond quickly to the action of the drug. The pain is greatly reduced, but not entirely suppressed. Each case must be individualized. I have known women to cry out during labor, but later to admit that they felt no pain, and that they were only afraid it would be hurt.

As I have said before, unhappy end-results are usually the consequence of an unskilled use of gas-oxygen. Gas should be administered in small doses, gradually leading the patient up to the point of analgesia. When this is accomplished, you will have her coöperation.

Observations by many obstetricians and anesthetists prove that very little nitrous oxid is transmitted to the child *in utero*, for the simple reason that the gas is administered only at the beginning of each pain, as the uterus is then in the initial stage of contraction, the fetal circulation is not affected by the gas-oxygen. I am rarely obliged to resort to artificial respiration; as a rule the babes cry out lustily immediately after birth.

Gas-oxygen may be given for many hours without any ill effect. My longest experience with it was about three and one-half hours, and very little difference was noticed in the patient's physical or mental condition after its use. It is better to begin early than to wait until the patient has suffered for hours, or till near the end of the second stage. When the gas-oxygen is used very late, especially in highly neurotic patients, the end-results are bad.

Gas-oxygen has a peculiar control over the progress of labor. There is no doubt of its efficiency in the second stage of labor when given for its analgesic effects. It relaxes the muscular structures to a degree comparable to normal sleep. The analgesia depends upon the amount of gas absorbed, the average mixture being 90 per cent. gas and 10 per cent. oxygen.

The nerve centers presiding over the five physical senses are affected, one at a time, in recognized and constant sequence. The sense of touch and feeling are the first to disappear; the sense of hearing is the last. The state of analgesia begins with the suppression of the nerve centers affecting feeling, and continues until the last acute sense has been suppressed, when anesthesia has been induced. The patient remains susceptible to suggestions long after the sense of touch has been put out of commission. Because of this the patient will carry out her part of the program at any time after analgesia has been established.

Women of intelligence are the most satisfactory subjects. Most of the trouble we encounter is with the mentally indolent class, or those of sluggish minds. A highly nervous woman may give trouble at the start, but after she has become acquainted with the surroundings, and with what the process means, a fair degree of success is accomplished.

First deliveries, under any system of management, are nerve wrecking. Most satisfactory results are obtained with multipara delivered by other methods; they know what they suffered in a previous labor. The most unsatisfactory cases are usually primiparæ simply because they expect too much.

The use of other remedies in connection with analgesia is of importance. Morphin is the ideal sedative during the first stage. I do not give it late in this stage, nor early in the second stage of labor, because it is apt to harm the infant. I instruct the nurse to give a dose of morphin four to six hours before the expected delivery. I have seen it given late only once, and then the child was born greatly asphyxiated. Resuscitation was very difficult. Morphin depresses the sensory nerves and often causes an annoying delay of labor in the beginning of the case. When pains are very severe, it is best to depend upon an occasional inhalation of gas-oxygen than morphin.

The whole aim at the end of the second stage of labor is to obtain a uniform relaxation of all muscles and to enable the patient to throw into activity all her expulsive power. The accoucheur must have complete control over his patient at this time, so that he may be able to deliver the head with proper precautions. The descent of the head during the second stage of labor may be hastened by the use of pituitrin. When analgesia does not relieve the patient of restlessness and nervousness at the time the head impinges upon the perineum, slight narcosis is induced. Analgesia, as a rule, controls the patient much better without a narcosis, and it is more satisfactory to have continuous analgesia for one-half hour previous to the delivery of the head.

FORCEPS AND ETHER.

I would always advise the administration of ether when complete relaxation is desirable. This applies particularly to the use of the forceps. It is better to deliver carefully with forceps under ether, than to perform some other operation upon the soft parts for the release of the head.

Analgesia affords no protection against lacerations to the cervix or vaginal walls. As the end of the second stage approaches, the addition of a little ether through the gas machine is advisable, as it promotes relaxation of the soft parts and makes it easy to control the advancing head.

I do not endorse nitrous oxid anesthesia in forceps operations. I am opposed to the rebreathing idea prior to delivery; and without rebreathing it is difficult to secure even a moderate degree of relaxation. There is not much advantage in gas-oxygen-ether practice. It is better to depend upon ether alone to secure complete relaxation.

Very little is to be said of local anesthesia. I have injected novocain into the perineum with very little result. It must be used when the head is very low, and then it is difficult to reinfiltrate the parts sufficiently. Novocain has very little value in the analgesics of childbirth.

COMBINED ANESTHESIA FOR REPAIRS.

A mixture of ether and nitrous oxid works admirably in primary perineorrhaphy. It is sufficient to give to the point of narcosis. Minor repairs, like lacerations of the perineum of the first degree, can be repaired under gas-oxygen alone.

FATALITIES UNDER NITROUS OXID.

To discuss deaths occurring under the influence of nitrous oxid, is to open one of the moot questions of anesthesia. I am prepared to say, however, that death from nitrous oxid invariably results from asphyxia. Still, asphyxia seldom occurs when gas-oxygen is administered by a competent anesthetist. Many believers in this form of anesthesia advocate the use of gas-oxygen in cardiovascular disease, because it is less dangerous than any other anesthetic. When I have this condition to deal with in labor cases, I terminate the act of parturition as quickly as possible. Blood pressure changes vary from 5 to 10 mm., but mount rapidly with the occurrence of cyanosis. We must stay away from the asphyxia stage, for a patient with a myocarditis is liable to apoplexy or an acute dilatation of the heart at any moment.

883 Mount Vernon Avenue.

POSTOPERATIVE ANALGESIA.*

BY

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POSTOPERATIVE analgesia means a painless convalescence for surgical patients. Attention to every detail before, during, and after operation, especially from the standpoint of pain production, will develop an analgesic technic which will reward the surgeon for his time and trouble. This technic should be directed toward the prevention rather than toward the relief of pain. It should include the avoidance of psychic trauma previous to operation and tissue trauma during operation. Gas pains, thirst, emesis, and catheterization must cease being necessary certainties and become avoidable and infrequent occurrence.

The first step in the technic should be to prevent psychic trauma before operation. This is done by informing the patient that, when she goes to the hospital on the afternoon previous to the operation, she will have a blood and urine examination, a liquid supper, and a thorough flushing of the bowel in the evening. Very early the next morning the nurse will give a hypodermic injection and another an hour later. After the second injection the patient will sleep so soundly that she will not know, or care, when she is taken on a cart to the operating room and prepared for the operation; the operation will be performed, and she will be taken back to her room and will continue to sleep for several hours. When she awakens, she will be so free from pain that it will be difficult to believe the nurse who says that the operation is over.

In more technical language, the surgeon will use scopolamine morphine anesthesia, no catharsis before or during the week following operation, and all preparation of the field of operation, including catheterization, will be done in the operating suite one-half hour after the second hypodermic injection of scopolamine morphine.

Scopolamine morphine is the only anesthetic that gives a perfect means of preventing psychic trauma previous to operation, and unlike any other anesthetic, it is followed by a period of analgesia

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

varying from eight to twelve hours after consciousness has been regained.

It may be desirable to continue the analgesia for a longer time. If so, it can be done by prescribing scopolamine 1/200 grain with morphine 1/32 grain, or scopolamine 1/400 grain with morphine 1/64 grain every four hours, beginning about four hours after the operation and continuing for twenty-four, thirty-six, or forty-eight hours, according to the probable length of the period of postoperative pain. Convenient hours for giving this postoperative twilight sleep (for that is really the condition produced) are 12–4–8 A.M. and P. M.

The production of and the relation between the anesthesia and the analgesia obtained by the administration of scopolamine with morphine are more graphically presented by a diagram.

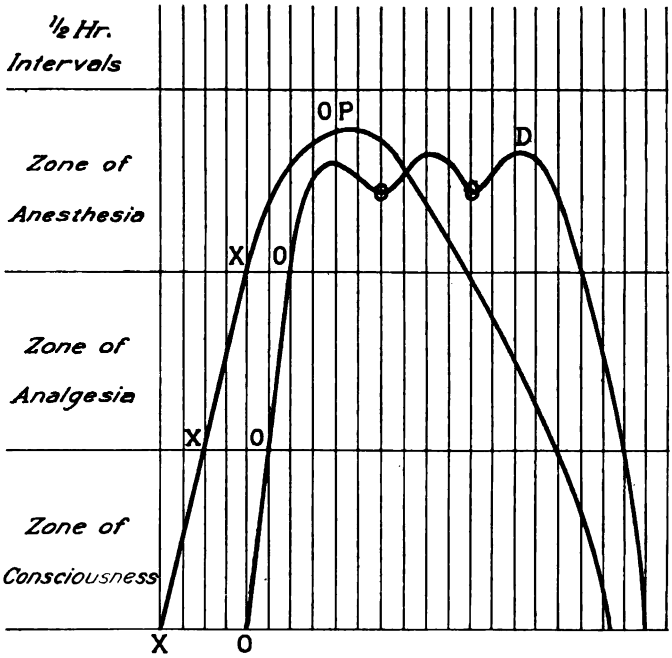

FIG. 1.—Showing production of and relation between the anesthesia and the analgesia obtained by the administration of scopolamine with morphine. X indicates scopolamine, gr. 1/100, morphine, gr. 1/4. O indicates scopolamine, gr. 1/100. OP indicates operation. D indicates delivery.

To avoid mistakes or confusion where a number of patients are receiving this treatment, the doses for all patients should fall on the same hour, and as the patients are more quiet just after the hypodermic injection and more wakeful just preceding, the hours above mentioned were selected so that the patient might be sleeping during the serving of dinner and supper and during the hours of morning ward work, and awake during visiting hours from 2 to 4 and 7 to 8 P. M.

The result of this treatment may be studied from the report of 452 cases prepared by my assistant, Dr. Martha Welpton, from the records of patients in the Cook County and Mary Thompson Hospitals during the year 1916.

Under "Sleep" the cases are listed as *slept well*, *fairly well*, or *poor*. The first and second nights are given separately.

"Pain"—anything which might cause patient to complain, as gas, headache, wound, etc.

"Emesis" covers any nausea or vomiting during the first two days, even though it were but a mouthful, and but once.

"Respiration" shows a record of respiration under sixteen during the first twenty-four hours. None was found during the second tweny-four hours.

"Pulse" shows record of pulse above 100 during the first twenty-four hours.

MARY THOMPSON HOSPITAL.

Two hundred consecutive cases operated and given postoperative doses of morphine 1/32, scopolamine 1/200, for from twelve to forty-eight hours. Thirty-six hours, or until midnight of the second day, was the usual time.

SLEEP.

	Poor	Fair	Well	Pain	Emesis	Resp.	Pulse
1st night	28	107	65	46	77	62	99
2d night	15	82	101				
Percentage							
1st night	14	53.5	32	23	38.5	31	45.5
2d night	8	41	50.5				

COOK COUNTY HOSPITAL.

Two hundred and fifty-two consecutive cases operated and given postoperative doses of morphine 1/32, scopolamine 1/400 for from twelve to forty-eight hours. Thirty-six hours, or until midnight of the second day, was the usual time.

Patients at the County Hospital were given the postoperative dose of scopolamine 1/200, and morphine 1/32; but this was soon discontinued and scopolamine, 1/400, was substituted for the 1/200 on account of the patient, occasionally, getting out of bed or showing signs of mild delirium, and thereby requiring extra attention from the nurses.

SLEEP.

	Poor	Fair	Well	Pain	Emesis	Resp.	Pulse
1st night.........	40	106	108	33	93	4	136
2d night........	20	87	145				
Percentage							
1st night.........	15.4	42.6	42.6	13	37	1.5	53.9
2d night........	7.7	34.5	57.8				

A mistaken idea of the degree of anesthesia or analgesia, that has produced, can be got by failing to recognize the differences in regional anesthesia.

The following chart gives the relative position of various operations in regard to the production of pain during operation and postoperative pain. Perineorrhaphy and hemorrhoidectomy requiring full doses scopolamine-morphine, and additional chloroform, or ether, heads the list; while extraction of teeth, and operations on the cervix uteri can be done painlessly with so small a dose of scopolamine-morphine that the patient will not lose consciousness.

Analgesia technic must include attention for the relief of gas pains, the relief of thirst, and avoidance of catheterization. Fortunately a simple procedure, namely, the employment of very large enemata to be retained, will perfectly control each one of these symptomatic conditions.

While the patient is on the operating table, and the abdomen is being closed, an enema of 2 quarts of water containing 360 grains of soda-bicarbonate is rapidly (average time two minutes) administered through a colon tube inserted into the rectum not farther than 3 inches. This 2-quart enema is retained by all patients except hemorrhordectomies and some thyroidectomies. After the patient has been taken to her room and is comfortable in bed, a time which is approximately twenty minutes after the 2-quart enema was given, another enema of 2 or 3 quarts, with or without the addition of soda, is given, but a little more slowly (average time ten to fifteen minutes). This enema is likewise retained, and is taken up by the circulation and eliminated by the kidneys, skin and lungs.

Pain in the wound itself, which should not be appreciable, is often augmented by the rough handling of the tissues, especially by blunt dissection and by excessive sponging during the operation. The "clean field" method, which calls for constant sponging of the incised parts, not only requires a deeper anesthesia but it exacts a maximum loss of blood by preventing coagulation; it also exposes the cut surfaces to the irritation of the air instead of allowing them the natural protection of oozing blood.

Even the position in which the patient is placed after the operation plays a part in the relief or production of pain. For every pain in the body there is a posture that the patient involuntarily assumes to obtain relief. The characteristic posture to relieve abdominal pain is an approximation of the chest and knees, thus relaxing the abdominal muscles. To secure this posture for the patient who has had an abdominal operation, elevate the upper part of the body with the bed rest or pillows and place a roll under the knees. The universal practice of discarding the pillow as a postanesthetic measure can in no way add to the comfort of the patient, but, on the contrary, may in some cases provoke vomiting or increase discomfort.

Enumeration of the factors in postoperative analgesia technic in order of their importance:

Scopolamine-morphine anesthesia.

Large enemata (4 to 5 quarts) given one-half hour following operation and retained.

Frequent minute doses of scopolamine-morphine at regular intervals after operation, to be continued for the first twenty-four or thirty-six hours.

The use of sharp instruments during the operation, avoiding blunt dissection.

Sponging gently and infrequently.

A comfortable posture for the patient, with a view to secure relaxation, or support, as may be required for the traumatizeal part of the body.

The fear of operation which so often causes the patient to seek surgical aid too late is a testimonial to the little attention surgeons have assumed toward this subject; it is well worth an effort to impress this upon the profession. By the institution of analgesic technic, the old laborious, worrisome first two days after the operation will be transformed into a much-needed rest and quiet. The hospital will be free from the odor of ether, enemata, and vomitus, the groans of suffering patients, the frequent ringing of bells, and the insistent demands for something to relieve thirst. When patients are comfortable or sleeping, relatives will willingly refrain from long and frequent visits. Internes will not be wakened at night by nervous and restless sufferers, and the surgeon will have patients who no longer look upon an operation with dread and terror, but who will encourage their friends to take advantage of painless surgery to be restored to health.

Painless convalescence presupposes surgical preparedness, and surgical preparedness, like national preparedness, insures early peace through easy victory.

32 North State Street.

PROPHYLAXIS OF GESTATION.*

BY

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Gestation is as old and inclusive as life itself. Ideas of prophylaxis are hardly less ancient. That which is, has been; what has been, will come again. The devil is wise, not because he is the devil, but because he is old. An ounce of prevention is worth a pound of cure. These are concentrated and crystallized expressions bred from ages of experience.

We listen with grim amusement to the report that, in China, the medical man must keep his patient in good health, or risk decapitation—certainly an urgent incentive to practice preventive medicine. In ancient Egypt the development and knowledge of the healing art reached a very high level. Herodotus reports his personal observations as follows: "Those Egyptians who live in cultivated parts of the country are, of all whom I have seen, the most ingenious. To give some idea of their mode of life: For three days successively in every month they use purges, vomits, and clysters; this they do out of consideration for their health, being persuaded that the diseases of the body are occasioned by the different elements received as food. The art of medicine in Egypt is thus exercised. One physician is confined to one disease; there are a great number, of course, who practice this art; some attend disorders of the eyes; others those of the head; some take care of the teeth, others are conversant with diseases of the bowels; while many attend to the cure of maladies which are less conspicuous." One victorious ruler returned to Egypt and declining to follow the example of his predecessors and build tombs, pyramids, and other lasting structures by which to record the victories and glories of his reign, he converted temples into medical schools and devoted a generous share of his attention and the resources of his realm to the study and advancement of medical science. This branch of learning was held by members of the priesthood. The customs and practices of that time were promulgated with the authority of religious rituals. It is probable that a workable reason for the practices was well understood. Much of the achievement and the reasons why results would follow given practices at that time have been forgotten and lost in the decline and dark ages which followed.

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

Some of the practices have been handed down from age to age. It is credible that, because of this fact, it was possible for a Scotch surgeon in Uganda, in recent years, to witness and report the performance of a Cesarean section by native operators. It is significant that this operation was done in an orderly manner, and not as an act of native frenzy. The method of preparation is of far greater significance. The report states that the site of operation, the operator's hands, and the instruments were bathed in wine; thus making use of the cleansing detergent and antiseptic value of dilute alcohol; although it is probable that these operators were as innocent of the reasons why they followed this technic, as were our American Indians half a century ago who exposed their store of buffalo meat to the desiccating and bactericidal action of the sun and air, knowing that in this way they could preserve a food supply much reduced in bulk and weight which would keep indefinitely. We are apt to look upon the speculum as of modern invention. Egyptian ruins have yielded up specula which were used at a time too remote for history to reveal the date.

Within the last thirty-five years, Dr. Henry J. Garrigues has written in all seriousness that an outbreak of puerperal sepsis, in a given maternity hospital, was due to the presence of fertilizer upon the lawn. Because of the very high mortality in maternity hospitals his belief was pretty generally shared by medical men and the lay public of that time, that hospitals were not desirable places in which to confine women. We now know that women can be safely confined in an occupied stable, if there is no break in the antiseptic technic and the patient is reasonably prepared.

We owe to wise experimenters, to keen and tireless workers in laboratories, to quarantine, to better hygiene, and to the heroic martyred dead from the ranks of the medical profession, the fact that small-pox, malaria, tuberculosis, diphtheria, yellow fever, typhoid, and typhus, diseases which have cost countless lives, distress, and material loss, are becoming more and more hedged about and, in some instances, almost wiped out, or reduced to sporadic occurrence. Under the initiative and direction of the laboratories of the department of health, large numbers of very young infants in the nurseries of New York are being inoculated with so-called toxic antitoxin the idea being to develop and increase the native immunity to diphtheria, so that there shall be a largely increased number of our population who are no longer susceptible to this disease.

We have recently taken a belated and relatively small part in a great war which, by force of circumstances at a critical time, became a dominating and deciding feature. The effort we have put forth, and the strain under which we have lived, have been enormous. The number of our dead and injured has been very great. Silently, with little warning, epidemic influenza with its accompanying pneumonia spread over a large part of the world. In a few months the mortality from this disease, in this country, outnumbered our casualties from war by more than two to one. In the case of pregnant and parturient women attacked by influenza, the mortality was in the neighborhood of 50 per cent. It is idle to prophesy as to whether or not a similar epidemic of this disease is again to visit us. Its cause is not well understood; therefore, it is not under control, and thus we are no better prepared to cope with its ravages than we were a year ago.

From time immemorial the distress, danger and the frightful loss of life incident to the process of the reproduction of our race, have been proverbial. The annual total loss of life from this cause is staggering. The horrible thought about this is the knowledge that much of this loss of life is unnecessary and preventable.

The accoucheur, developed to his best, should be a well-trained surgeon, because obstetrics is, essentially, a surgical branch of medical science, which has for its field the care of women throughout the whole childbearing process; namely, the treatment of sterility; the supervision and management of pregnancy, labor, and the after-care of mother and child, as well as such treatment and operations as may be found necessary to restore to good health and correct function, which will again enable the patient to take up her accustomed mode of life. It is at once apparent that this is a field of great importance and of very wide scope.

Speaking in a broad sense, the prophylaxis in obstetrics should begin several generations before birth. This places significant obligations upon both parents. A child has the inherent right to be born under favorable conditions; it should be well-nourished, clothed, and sheltered; and, later, suitably educated for the demands of its day and generation.

The progress made in infant feeding and child-welfare must have a direct result, in an obstetrical sense, in that fewer ill-developed and sickly children are growing up. One of the results of the late war will become apparent to obstetricians in a few years hence, when the children of the war zones, who have survived injuries, exposure, starvation, and disease, arrive at the age of reproduction with distorted, ill-developed bodies. The obstetrician should advise as to the care of young girls when menstruation is being established. He should treat and take good care of cases of sterility. The sterile woman, by the time she becomes aware of her sterility, is usually very eager to bear a child. Often her mental condition is pitiable. She is entitled to a careful search for the causes of her condition and the employment of every possible means to make her a normal woman. This investigation should begin and end with an examination of the husband if he is found to be sterile? If the husband's condition is found to be satisfactory, the physician should inquire into the wife's general health, environment and occupation. A complete and thorough physical examination should be made. Laboratory facilities should be employed wherever they are indicated. If her mode of life is found to be faulty, this should be corrected in so far as it may be possible. Treatment looking toward the cure of any disease found to be present should be instituted. If physical defects are found, such as faulty developments, deformities, stenoses, displacements, and obstructing neoplasms, surgical operation should be resorted to, if by careful selection and skillful technic there is even a reasonable hope of accomplishing the desired results.

The obstetric surgeon must not only meet and manage the conditions incident to normal reproduction, but he must also be prepared to cope with abnormalities and accidents which sometimes complicate gestation, labor, and confinement.

The woman passing through the process of reproduction is no more exempt from disease than the non-pregnant. Not infrequently the obstetrical condition becomes the one of less importance. Critical and dangerous are cardiac decompensation, cardio-nephritis, pulmonary tuberculosis, pneumonia, all acute infectious diseases, chorea, diabetes, cancer in its varied locations, acute appendicitis, tumors and cysts giving rise to acute symptoms with or without twisted pedicles, acute cholecystitis, pyelitis, septicemia, hemorrhage, and shock.

The obstetrician must know how to manage the various forms of abortion, threatened, inevitable, and incomplete; ectopic pregnancies, as well as accidental and concealed hemorrhage. During simple labor, conditions may gradually or suddenly arise which place the lives of both mother and child in jeopardy and operative delivery, either pelvic or abdominal, may be unexpectedly demanded of the attending obstetrician. The uterus may rupture; lacerations, of greater or less extent, may occur in the parturient tract; postpartum hemorrhage, with its accompanying acute anemia and shock, may result. During the puerperium the accoucheur must also be on his guard for and avert, if possible, complications; he must continue to treat, and, where necessary, operate upon his patient, until she has fully recovered. The obstetrician should be the one to perform these operations, because delay would, in many instances, prove fatal to the patient; and, aside from the purely surgical aspect of the case, there still is to be met the strictly obstetrical condition. The two are inseparable. To meet properly all of the demands in the practice of this branch of medicine, the obstetric surgeon must be calm and clear in his judgment and in his actions; he must possess the ability to decide instantly what is to be done, and have a technical operative skill of a very high order.

Prophylaxis of pregnancy (prenatal care) means a supervision of the pregnant woman throughout the whole period of gestation. It means giving instructions as to her mode of life, clothing, occupation, exercise, sleep, diet, hygienic care of her body, and especially the avoidance of constipation. She should be the subject of regular monthly observations during the first six, and bimonthly during the remaining three, months of pregnancy; and as much oftener as the nature of her case may require. At such times her urine should be examined and her blood-pressure taken. Early in pregnancy there should be a thorough physical examination, including careful external and internal pelvimetry. She should be instructed to report promptly anything which may appear to her abnormal, and to bring with her the list of questions which she would like to have answered. The aim should be to prevent, anticipate, and quickly meet complications, if they oocur.

Disturbances of vision should call for prompt ophthalmoscopic examination. Only by this method are we able to distinguish between toxemia of the later months of gestation and the exacerbation of chronic nephritis during pregnancy. In the former, structural changes in the eyes are rarely detected, and the symptoms are transitory if the toxemia is removed. In the latter, structural changes in the eyes are the rule; and, when marked, may demand prompt evacuation of the uterus in order to prevent the loss of sight.

TOXEMIAS OF PREGNANCY.

The toxemias of early pregnancy, as expressed by the term pernicious vomiting, are not as yet susceptible to satisfactory treatment. A considerable number of these patients recover under general care, such as rest in bed, no food or drink by mouth, rectal feeding, hot baths, colonic irrigations, and the tentative and, as the patient improves, the gradual resumption of mouth feeding of solid carbohydrate food. Transfusion has been followed by prompt and brilliant results in some cases, and has signally failed in others. The results from the use of corpus luteum extract have not been satisfactory in our experience. The improvement, if any, due to interruption of pregnancy appears gradually.

The toxemias of late pregnancy, tending toward or arriving at the eclamptic stage, now admit of early detection and treatment with happy results. We do not encounter so many cases of eclampsia as formerly. Many of those which we do see now are not extremely ill. The mortality is lower. Closer observation during pregnancy (prenatal care), is sending more of these cases in the early stages to hospitals where they are treated with almost uniformly satisfactory results. A steadily rising bloood-pressure warns of toxemia at a considerably earlier stage than the findings in the urinalysis. The treatment is similar to that used in eclampsia. Rest in bed and quiet surroundings are important in conjunction with eliminative treatment, and a diet restricted to milk and cereals, and medication to secure sleep.

RELATIONS BETWEEN PATIENT AND ACCOUCHEUR.

The relations between the accoucheur and patient, in so far as the reproductive process is concerned, should be that of mutual understanding and confidence in order to secure the necessary coöperation. This places obligations upon both persons; upon the former, that he shall be competent, honest, and alert in his interest and well sustained watchfulness, as well as careful and thorough in his investigations of the case; upon the latter, that she shall faithfully follow instructions, report promptly deviations from the normal, give herself over to the entire care of the physician, and place the responsibility for the safe management of her case in him alone. This coöperation should develop in the patient the confidence that all will go well if conditions are normal and, in the presence of abnormalities and complications, the best means will be employed to overcome them successfully. If this relation can be established and maintained, the patient will be immune to the baneful influences of bearers of horrible tales, which grow in seriousness as they are told, by the donors of gratuitous and irresponsible advice concerning child-bearing. Such talk tends to engender apprehension and unwarranted fear, which is demoralizing to the pregnant woman.

Bad as the record still is, it can be truthfully stated that something over 90 per cent. of pregnant women pass through childbirth with only minor or no complications, and without undue distress and suffering.

Through better obstetrical teaching, more watchfulness during pregnancy, better and simpler asepsis, and better operative interference where operations are necessary, fewer men attempt major surgical interventions in obstetric practice without adequate assistance and surgical training; these and the "let-alone" policy during the puerperium, unless there are decided indications for interference and treatment, have resulted in a marked lowering of mortality and morbidity in the well conducted maternities throughout the country and more especially in the private practices of the more recently trained obstetricians. This improvement has been very noticeable during the past ten years. While there is demand for still greater effort to teach, and to practice, better obstetrics, the betterment obtained furnishes more hope and gratitude.

THERAPEUTIC ABORTION.

There is an increasing number of women, the victims of acutely active, or arrested, pulmonary tuberculosis, who have become pregnant, and who are referred to us with the request that the uterus be emptied and that the patient be sterilized. This practice is susceptible of very great abuse. Some women do not appear mournful over the prospect of being relieved of an existing pregnancy, or over the inability of ever again becoming pregnant. The responsibility for bringing about such a profound change in a woman's life is very grave. On the other hand, we know that nonpregnant women have quite enough to contend with, if they hope to have this disease cured or arrested. Undoubtedly, pregnancy stimulates its progress and makes added demands upon an already overtaxed organism. If abortion is performed, it may need to be repeated at intervals of a few months. We know the results of such treatment in an otherwise healthy woman.

If abortion and sterilization are to be performed, the most satisfactory way to empty the uterus is by abdominal hysterotomy, resecting a portion of the tubes from the uterus, ligating the distal end and suturing the peritoneum over the cut ends. But we need more light and coöperation upon this subject from the tuberculosis specialists. They should be invited to our meetings, and by formal papers and the interchange of experience and discussions upon this subject, we should arrive at a better understanding of what is the right course to be pursued in these cases. The decision to bring about this great change in a woman's life should not rest upon the fiat of a hurried physician who may be working in a dispensary for tuberculosis patients, and who is acquainted with but one side of the question.

42 East Thirty-fifth Street.

PRENATAL CARE.*

BY

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I trust that you will not be bored by the presentation of a subject which has received such thorough consideration in previous sessions of this body and in the meetings of nearly every medical society in this country during recent years. The very fact that prenatal care has been so persistently and continuously discussed by the profession seems to indicate its great importance to us and to future generations.

Ordinarily, prenatal care begins with conception and ends with the delivery of the child. We should go further, however, and say that prenatal care includes the care of women, from all standpoints, who may expect to conceive in the near future, as well as those who are already pregnant. It will avail little to try to make a woman healthy and happy, after she is enceinte, if we overlook and neglect pathologic conditions at a time when they might have been easily and safely remedied, *before* gestation supervened.

If one were to purchase a piece of real estate, he would likely see

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that there were no hidden mortgages upon the property. He would obtain a reliable abstract from a good lawyer. Does not this common-sense principle apply to expectant mothers? If one were to plant a garden, the yield of which would mean the future health and happiness of many persons, would he not see to it that seed and soil were in the best possible condition to secure an ample harvest? Does not the same precaution hold true in childbearing women? Until of late, prenatal observation was conspicuous by its absence. "Gestation, in most women of the present day, is not a purely physiologic process. Motherhood exacts a most severe test of women's physical and nervous make-up."

During the past two years, in times of stress and patriotic excitement, we have seen thousands of our women busily employed in the preparation of supplies in anticipation of the needs of the suffering and the dying. But how many of these same women will go to one-half the trouble and expense for the care of an expected child? Classes were formed for the instruction of women in Red Cross work; but how many of you would take the same pains to teach the pregnant the preparations necessary for anticipated motherhood? And yet more babies were born in this country during the period of war than there were casualties in the entire American Army. The expectant mother is ever in our midst. This fact, perhaps, breeds lack of appreciation.

Schwarz has told us that "more than nine-tenths of the women of the United States receive no prenatal care; that more than 40 per cent. of all confinements are attended by obstetricians who are not qualified to give the parturient woman a full share of the safety and comforts which modern obstetrics makes possible, which ought to be the birthright of every expectant mother and unborn babe."

Reder has told us that "the organism of a woman expecting pregnancy should be in good working order, and any defects which may exist should be corrected *before* she allows herself to become impregnated. This chapter in a woman's life is not dwelt upon with sufficient emphasis, as is evidenced by the ignoring of even the minor ailments which are frequently present."

The average obstetrician thinks it more important to know the technic of applying forceps and of doing Cesarean sections, than to acquaint himself with the simple and homely rules of prenatal hygiene.

Some years ago I was selected to deliver a lecture during "Baby Week" in my city. My subject was "Prenatal Care." Many of the women in the audience were in a "delicate condition," and I have never had a more appreciative audience. A multitude of practical questions were asked, questions that their mothers should have answered. I referred them to their family physicians for the information sought; but the women replied that their doctors were too busy to bother with them; or, if they had already sought information from them, they received but scant attention, or were told to do as they pleased. Physicians generally do not appreciate the great importance of prenatal care, a subject which all ought to understand and appreciate highly.

Obstetric clinics, especially like those of the East, are urgently needed in Ohio, and in many other central and western states. Some of our cities in this country have instituted prenatal clinics and through them the mortality and morbidity of childbirth has been reduced in a marked degree. No doubt the women of any community could be easily and quickly educated to take advantage of such clinics. We have plenty of clinics to care for human wrecks, but not enough to prevent them. Can one estimate the economic value of the latter?

There are a few things patients should *not* be told when they come for prenatal care. None of the numerous books or monographs commonly given women at this stage of pregnancy are of any value. These books and booklets are, usually, presented for no reason other than to make money for the publisher or to advertise the fad of some extremist. I generally advise patients not to tell their friends about their condition, lest these friends frighten them with bad advice and stories of terrible obstetric calamities, some of which probably never occurred. If my patients desire to use "Mother's Friend," or any other coal oil product to anoint themselves, I offer no objections, because they will do it in spite of injunctions and, aside from soiling their linens, they do little harm. A special diet, in order that the babe may be small, its bones elastic, and the color of its hair fine, does not appeal to me. The idea that, if a woman will remain in bed for the first three months of gestation, she can avert almost any obstetric calamity, is equally foolish, except in certain rare instances.

The pregnant should not attend dancing parties habitually. The reading of good books, playing of the piano, and the wearing of enough clothes to avoid contracting colds should be advised and encouraged. Nor is it necessary for a woman who expects to be confined shortly to clean house, hang curtains and do things which create fatigue and prevent her from being in the best possible condition at the time of labor when her best efforts are needed.

The automobile should be avoided by pregnant women. It should not be used after the sixth month of gestation, except upon smooth roads and at a low rate of speed. Detached placenta and other injuries may occur in women who persist in automobiling contrary to orders. In a way, this caution applies to unnecessary traveling on trains, on the ocean, and on horseback.

A woman should stop, look, and listen before descending stairs. As pregnancy advances, the abdomen enlarges, and she cannot see her feet when standing. The center of gravity is changed, and she becomes more or less awkward in her gait. Accidents are common in consequence and the results, at times, disastrous. What is ordinarily a harmless drug may become a most potent oxytocic during pregnancy. If the woman says that she is afraid to take a certain drug for fear of losing her babe, it should not be given to her secretly. One may be greatly chagrined to find that it does exactly what it was not expected to do.

What, then, is to be done to make the prenatal stage safe and as comfortable as possible? The first complaint is vomiting. For this condition we have no specific remedy. Some remedies have, sometimes, succeeded; all of them have failed. These cases have been treated from the standpoint of the theory of acidosis, the ammonia equivalent, as well as the psychic theory. They have been transfused, bled, starved, and fed. They have been kept in dark rooms under the influence of opiates; they have been subjected to surgical expedients; and all without avail. Recently, I have been administering corpus luteum extract, after Hirst, and I am still where I started. The one best remedy is three months' time.

Headaches should receive careful attention. They may be indicative of grave danger, or they may be relieved by flushing the bowels, or by correcting defective vision, or by any one of a hundred other things not intimately connected with pregnancy. It is possible to glean much valuable information regarding the kidneys, and also certain metabolic disturbances, by an early examination of the fundus of the eye when we are warned by visual symptoms.

The urine should be examined at definite intervals. If albumin is found, it is not, necessarily, a sign of impending eclampsia or uremia. Nor is it always an indication of grave kidney lesion. We may have albumin in the urine if the specimen has not been secured by the catheter. The patient may be on the threshold of a severe attack of eclampsia with the urine normal. The eclampsia toxin, whatever it is, may attack the brain long before it involves the kidney; and nephritis is, many times, secondary to the eclampsia.

Eclampsia and uremia are not the same. Albumin in the urine should stimulate careful examination, observation, and supervision of the patient. Its presence in the urine does not mean that the uterus need be emptied, or that alarming symptoms will make their appearance.

My faith in blood-pressure readings is not as great as that of some of my distinguished colleagues. I admit the value of blood-pressure readings in pregnant women; but it matters much who interprets the readings and who weighs the evidence. There has been a common impression that pregnancy causes an increase in blood-pressure; generally speaking, this is not a fact. There may be a gradual normal rise in blood-pressure during the last two months of pregnancy and again a recession during the last week. Campbell says: "There is no question but that, accompanying toxemia, there is in the majority of cases a marked hypertension, and this should put the obstetrician on his guard." Vaquez claims that eclampsia never occurs in cases of normal tension. Yet we have seen cases of extremely high blood-pressure in pregnancy with no evidence of toxemia; on the other hand, we have seen eclampsia develop and produce death, where the blood-pressure was normal.

The bowels should be kept open and the stool soft. The regulation of diet will do much toward regulating the bowels. The food should be plain and simple. A dogmatic diet does not answer the purpose. Let these patients have food that tastes good to them, and that is intended for human consumption. "Plenty of fruit and little alcohol" is a good rule to follow.

Exercise is of importance. A pregnant woman should be in the open air as much as possible. She need not be forced to sleep upon a *sleeping* porch when the thermometer registers zero. The babe will keep without resorting to cold storage. The patient should go out of doors whenever the weather is agreeable, hot or cold, and when the streets are not slippery. She should walk in the open air every day, dress according to the weather and season of the year, and not extend the exercise beyond endurance.

Clothes should be suspended from the shoulders or hips, or both, whichever the patient may find most comfortable. The ordinary corset need not be laid aside in the early months of pregnancy. She needs it then more than ever. After the third month, the corset must be properly adjusted and productive of comfort. It will aid in preserving the figure of the mother.

The breasts should be treated early. Inverted nipples must be corrected. There is no need to besmear the nipples with disgusting ointments to keep them in condition for nursing. If they are washed daily, and a little alum and cacao butter applied, they will be well prepared for nursing when the time arrives.

Baths are not objectionable. The water, however, must not be too warm nor too cold. The same may be said of the bathroom. Frequent bathing promotes elimination. The moderate vaginal douche, for cleaning purposes, adds to the comfort of the patient.

It is difficult to prevent sexual intercourse during pregnancy. Most obstetricians think we should insist upon it after the sixth month. Accidents are apt to take place from injudicious intercourse about the seventh month. Most women hesitate to seek advice about this matter. We ought to anticipate them in this matter.

Pelvimetry is indicated in every instance. The fact that one or more children have been born *per vias naturales* is no positive assurance that the patient will have no trouble in a subsequent labor, or that the pelvis is normal. Perhaps the previous confinement was manipulated so skilfully that a partly abnormal pelvis or a large child gave rise to no trouble. Nor is it certain that, because a patient has had a Cesarean section, she will be in need of another. I have delivered several Cesareanized women by the natural route. All women who have previously undergone Cesarean section should thereafter be confined in a good hospital, attended by a competent obstetric surgeon who is ready for any emergency.

Vaginal examination is advisable early in pregnancy. All unnatural discharges, sores, malformations, and malpositions of the uterus should be carefully noted, and their influence upon pregnancy, labor, and confinement earnestly considered.

The teeth should receive attention in all cases. An X-ray examination will frequently expose hidden sources of infection, and the removal of the teeth will be most beneficial. Waller's experience has led him to believe that if the removal of dental disease is adequately carried out, even after it has produced symptoms, improvement in health is sufficiently rapid and substantial to be of signal benefit to the child *in utero*. The apprehension of some dentists in regard to cleaning and repairing teeth of the pregnant has no good foundation. I have repeatedly sent women to the dentist to have their teeth put in the best possible condition, only to have the dentist tell them he was afraid that his treatment might cause a miscarriage. There is no more danger in the treatment of the teeth for ordinary defects in the pregnant woman, than there is in manicuring the nails.

If luetic disease be present, no good reason exists why antispecific treatment should be denied the patient. Salvarsan will rarely cause a miscarriage and if it does, no harm is done. Many observers, notably Fullerton, say that "syphilis is, without question, the most common disease met with during pregnancy." Recent military activities will not tend to change this estimate. The frequency of its occurrence is difficult to estimate because of meager statistics. Williams has gathered statistics from 10,000 mothers who came under his observation in Johns Hopkins Hospital and found that 26 per cent. of the fetal deaths were due to syphilis, while the mortality, due to the various toxemias, was only 6.5 per cent. In the face of these statistics it is obvious that prenatal care has a wide field, and that it ought not to be limited to the toxemias.

Williams urges that syphilis be recognized as early as possible for the administration of antisyphilitic treatment. The dosage should be sufficient to be transmitted to the child. Only one-fourth of the syphilitic women present observable lesions during pregnancy; the remaining three-fourths cannot be determined by ordinary examinaion. A still-born infant, or living child developing hereditary syphilis, reveals the true condition. Theoretically, every pregnant woman should have an early Wasserman test or better still, before she conceives. Fullerton, like many others, observse that the Wassermann reaction is not reliable in pregnant women. Before, or early in pregnancy, they may give a strongly positive reaction and, without treatment, frequently give a progressively weaker reaction as they approach the end of term; at this time the Wasserman reaction may be negative; and again, within a few months following delivery, the reaction may become strongly positive. Nurses engaged for luetic cases must be warned of the danger.

Skin diseases of all kinds should not be neglected. Varicose veins must be supported by bandages or rubber stockings throughout gestation.

The heart and lungs deserve to be examined at least once during gestation, to prevent the obstetrician's being taken by surprise if unexpected complication arises from these organs. This applies especially to the detection of incipient tuberculosis of the lungs.

A history of mental disease or disturbance in the expectant mother should be carefully considered with a view of preventing or controlling future manifestations.

Rheumatism, or rheumatoid conditions, deserve attention on account of heart and joint complications, and the possible development of chorea.

Tonsils, if infected, should be removed before pregnancy occurs, or soon thereafter. They may be a prolific source of infection. The recent epidemic of influenza has left us with a long train of new conditions related to the sinuses, nervous system, and other parts of the body. It behooves us to take this fact into consideration when examining the pregnant woman.

It is well to attend to hemorrhoids before conception. Hemorrhoids create much discomfort at all stages of pregnancy, especially after delivery; but it is not safe to remove them late in pregnancy.

Goiter may, or may not, be of serious import during pregnancy. I have seen goiters become larger, as well as smaller, during gestation. Some goiters will cause no symptoms, while others cause the patient to become distinctly thyrotoxic. I have had several exciting experiences and one death conducting labors complicated by goiters. It is best to refer these cases to one who has had large experience with all forms of goiters and to follow his advice. Pregnancy is no contraindication to operation if the goiter produces pressure symptoms.

Pregnancy is never a contraindication to surgical treatment of diseases which are, ordinarily, treated by operation. In fact, many conditions which might be treated rather conservatively in the nonpregnant woman become urgently surgical during gestation. In an article on this same subject, Reder says that a woman, when pregnant, is in her happiest sphere when she can be let alone; the state of her sympathetic system demands it. A surgical operation upon a pregnant woman is fraught with danger, uncertainty, and anxious apprehension, not that the operation may prove unsuccessful, but that the pregnancy may be interrupted. We have no guide to help us in our judgment as to the disposition of the uterus to abort in any stage of gestation. It is believed that an urgent major operation, of whatever nature, performed during pregnancy does not influence the progress of the pregnancy other than to favor its continuance, provided no septic process, with its continued high temperature, results in the death of the fetus and causes abortion. High temperature, following infection, usually causes death of the fetus in a few days. The presence of pus is the most formidable pathologic factor. In cases of pus collection, should the pregnancy continue, the consequences of the suppurative process in the pelvis, may result in the formation of adhesions of sufficient strength and extent to complicate seriously an otherwise normal labor.

Appendicitis is a surgical condition which gives us concern during gestation. If symptoms of this disease existed at any time, the appendix ought to have been removed before pregnancy. Some go so far as to demand an exploratory incision where there is a suspicion of the existence of appendicitis. Pregnancy does not predispose to appendicitis, but may light up an old appendical lesion, and change what seemed to be a normal gestation into a serious surgical condition.

Constipation and its attendant unpleasant symptoms, as well as pain and digestive disturbances, give much trouble where a chronic appendicitis has been allowed to remain until pregnancy has taken place. It is a surgical axiom that a troublesome appendix should be removed as soon as it is diagnosticated. Pregnancy is not a contraindication to this edict, but rather a factor making the decision to operate more imperative. The earlier the appendix is removed, the quicker the patient will recover, and the leess the liability to adhesions, abortion, and the possible death of mother and child. I have operated upon pregnant women for appendicitis, and have seen many more operated upon by others, but have never known of an abortion or miscarriage, unless pus and continued high temperature were present.

Hernia should be operated upon either before or after pregnancy. The subject of tumors complicating pregnancy would furnish enough material for a separate paper. Some tumors should be removed before conception is allowed to take place; others may be removed during gestation. This is a matter which requires mature judgment. No surgeon should attempt the treatment of tumors complicating pregnancy without the counsel of a competent obstetrician.

Cancer of the cervix, early in pregnancy, is a most discouraging complication; it predisposes to abortion, and its growth is very rapid. Here, too, the mature judgment of an experienced surgeon is of the greatest value. In the more advanced stages of the disease, hysterectomy should be performed without regard to the life of the child. If cancer be discovered toward the end of gestation, it may be well to await delivery and then operate; in the earlier months, the surgeons should insist upon immediate operation.

239 East State Street.

THE CARE OF THE BOWELS DURING THE PUERPERAL PERIOD; A FURTHER REPORT.*

BY

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I HAD hoped to present the material with which this short paper deals at the meeting of this Association last year. Being, however, unavoidably detained in New York, I was unable to do so, and I have accordingly carried it forward to this year's meeting in the hope that the subject may have some small interest for you, and that you will discuss it freely.

In order that we may have a clear understanding of the matter in hand, I have taken the liberty to quote from a report (1), made to the Lying-In Hospital in 1917, with which I shall occupy but a moment and thereby give the figures of the first report:

"During the last two decades many changes in both thought and practice have taken place in the care of the puerperal patient, but like the laws of the Medes and Persians, one habit has been fixed; namely, the attributing of a large percentage of all the abnormalities of the puerperium to *constipation*, and as a sequel the administration of various cathartics in regular and large doses.

"Nowhere in medicine does the childlike devotion to custom shine forth with more brilliancy and persistency than in this matter of routine catharsis, when pills and powders are dealt out with a liberal hand to all patients, without giving the hapless individual either the time or the inclination to demonstrate that such catharsis is necessary, the reason being simply that it is the proper thing to do or always has been done?"

In looking over the literature for the past twenty-five years, the writer has not been able to come across a single article treating of the care of the puerperium where the patient's intestinal tract was given any thought, except "of course, the bowels should be opened immediately," or "the bowels should be opened on the second day," "and thereafter kept open by means of a daily dose of . . .," whatever form of physic the individual physician preferred.

It must be admitted that, until very recently, the author was one of the many who followed the dictates of tradition and prescribed cathartics with schedule-like regularity, to his patients who were in the puerperal period. At times, in fact very often, when a slight temperature appeared and the patient had not had an evacuation of the bowels for twenty-four hours, the administration of the purgative dose did not help matters much, but occasionally it seemed to make them worse. Although this was noted, still so strongly ingrained was the "bowel fetish," if one may use the expression, that no logical action was taken. About two years ago, however, the writer was attending a medical meeting out of town and was conversing with a well-known obstetrician of a neighboring city. The subject of constipation came up; this obstetrician stated that he considered the routine administration of cathartics and purgatives in the puerperium to be pernicious, and that he had given it up in his own practice, believing that many of the low-grade fevers in the puerperium were induced by the *cathartics* rather than by the *constipation*, and this by a stirring up of the colon bacilli and other organisms inhabiting the intestine.

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

"This idea made such an impression that we determined to try it out faithfully in a series of cases at the Lying-In Hospital, and carefully note the results. Accordingly, then, it must be admitted, with a considerable degree of skepticism, each patient was alternately placed in Ward A or Ward B as she came from the delivery-room. The patients in Ward A had no catharsis administered at all, while those in Ward B received the usual routine treatment with the various preparations in ordinary use was given.

"In the "noncatharsis" cases three days were allowed to elapse, and if no bowel movement occurred, a low saline enema was given; the patient's bowels then not disturbed until three more days had passed by, when another saline enema was given. This was continued until she was discharged from the hospital.

"The results were most interesting. Three hundred and twenty-two patients of each class were carefully observed; of the 322 cases *to whom cathartics were administered, twenty-eight* had fever, at some time, during the puerperium, fever being considered present when the patient had two consecutive temperatures of over 100.4 during the puerperal period.

"Of the 322 who received *no catharsis*, only *three* had fever, and one of these had a mammary abscess.

"The cases were in no way selected. The delivery technic was in all cases the same, and administered by the same operators.

"Added to the above statement, let it be said that the number of women who had a normal bowel movement every second or third day was fairly large; that in none of the cases not receiving cathartics were there foul breaths, headaches, coated tongues, breast complications, or the other time-honored sequelæ which are supposed to occur after a day or two of constipation."

Realizing that the number of cases was not sufficient to be of absolute value from a statistical point of view, the treatment was again begun and kept up until 589 cases in which no catharsis was administered, and 578 cases in which ordinary catharsis was used, were obtained in addition to the original seven, the cases being conducted in exactly the same manner as in the first instance.

In the second series, herein quoted, of the 578 cases to whom catharsis was administered, fifty-six had fever. Figured on the same basis as the others, the proportion of those showing fever was 9.6 per cent. In the 589 cases in whom *no catharsis* was administered, fifty had fever, or 8.6 per cent. Included in these were all the foul lochia, acute coryza, a gall-bladder, pyelitis, breast cases, and other things to which it was perfectly reasonable to ascribe the fever, so that, while the difference in ratio in the second set was nothing like that of the first, still the cases having the catharsis showed a greater percentage of fever than those who did not.

Taking the total number of cases into account, there were 900 who were given routine catharsis, and 911 in whom no catharsis was administered. In the 900 who had catharsis, there were eighty-four who, at some time or another in their convalescence, developed a temperature of 100.4 twice during twenty-four hours in their puerperium. Of the 911 to whom *no catharsis* was administered, there were fifty-three cases who developed the same temperature at the same time, or 5.8 per cent. In other words, in approximately 1000 cases of each type, the febrile morbidity was about one-half as much in the cases of those who received no stimulation to the bowels as of those who did.

"When we consider the lessened danger of infection caused by the spreading about the mother's soft parts of loose diarrheic movements, when we consider the enormous amount of labor saved for the nurses as well as the comfort of the patient, and when we consider the figures quoted in this series, it gives us some intimation of the necessity for active thought on the part of the obstetrician for every move that he makes, every drug that he prescribes, and for less habit and more individualization.

"The writer is far from believing that there is never any necessity for administering a cathartic in the puerperium; quite the contrary;

but what he wishes to emphasize is the danger and uselessness of routine drugging, and the assigning of certain effects to conditions which have not been shown to be the cause of the symptoms exhibited.

"Since trying the above treatment in the hospital, the author has adôpted it in private practice where the results have been equally satisfactory."

REFERENCE.

1. The Routine Use of Cathartics During the Puerperium. Bull. of the Lying-In Hospital of the City of New York. May, 1917, Vol. xi, No. 2, p. 118.

ONE TWENTY-FIVE EAST THIRTY-NINTH STREET.

A METHOD OF PLACING SUTURES IN IMMEDIATE REPAIR OF THE PERINEUM.*

BY

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(With two illustrations.)

IN a secondary perineorrhaphy it is often difficult and even puzzling, to determine the original relations of the various structures involved. Immediately after delivery there is no such difficulty, if we except those rare cases in which the lacerated surfaces are very irregular. As a rule, the problem is clearly set forth as soon as the torn surfaces are exposed. It is at once plain just what surfaces must be apposed in order to restore the original condition. It would seem reasonable to expect uniformly good results. But we know that, in a considerable proportion of cases, the results are not satisfactory. Except curettage, secondary perineorrhaphy is the most frequent operation performed on the child-bearing woman.

The reason for the frequent failures in the primary operation is that the torn surfaces are not properly coapted. The suturing is often done without an anesthetic, or, still worse, with the patient partially anesthetized. The light is sometimes poor and often there is no assistant to expose the parts and to keep the surface free from blood and other fluids. These difficulties suggest the importance of having obstetric cases delivered in hospitals. But even in cases in which we have an anesthetist and competent assistants, the condition of the patient may be such that it is desirable to shorten, as much as possible, the period of anesthesia. In view of these handicaps, we are justified in adopting the easiest and simplest method of suturing, provided it gives good results.

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* Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

The method which I am about to describe requires fewer sutures than the usual methods. I believe, also, that they are more easily introduced, and secure better results. This method is specially suited to cases in which there is a simple longitudinal tear. In irregular tears it may often be employed in the main portion, either before or after suturing the irregular portions.

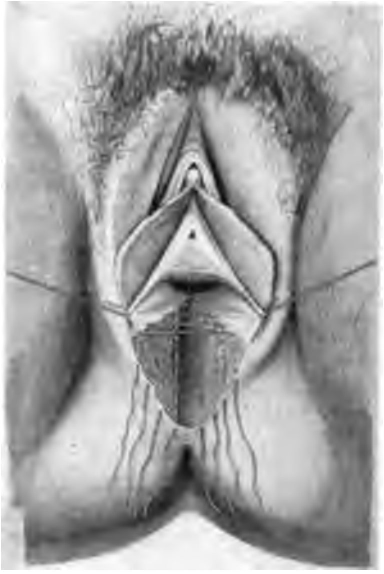

FIG. 1.—Showing method of placing sutures in immediate repair of an incomplete perineal tear.

The method is as follows: The torn surfaces are well separated so that they form almost a plane surface. The needle, armed with silkworm-gut, is entered at the upper end of the wound a half-inch to the right of the gutter, or deepest portion of the wound, carried down parallel to the gutter, and brought out through the skin at the lower end of the wound. The needle is now removed, placed on the other end of suture, and then carried through the tissues a half inch to the left of gutter. The succeeding sutures are placed parallel to the first with half-inch spaces.

In case of a deep tear, there is no possibility of puncturing the bowel after the first stitch is taken; and the danger is very slight with the first, as the needle moves parallel to the bowel. With the usual method of transverse sutures, the danger may be encountered with each stitch; and the effort to avoid this danger may result in a dead space in the deepest part of the wound.

The patient should, of course, be anesthetized; but, if no anesthetic is used, this method will be found far less painful than the usual procedure. There is, practically, no pain in going through the mucosa and under the torn surface. It is only as the needle passes through the skin that there is pain, but with skilful work the suffering is but momentary. With the usual method of suturing, there is severe pain from the moment the needle enters until it is withdrawn; and the effort to shorten this interval is likely to result in poor work.

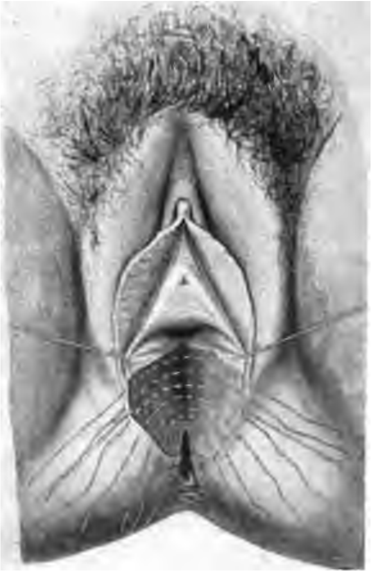

FIG. 2.—Showing method of placing sutures in immediate repair of a complete perineal tear.

If we imagine that the torn surfaces could resume their original positions after the sutures are placed, and before they are tied, we may picture each suture enclosing a narrow rectangle. For instance, if a given suture is carried a distance of 3 inches on each side from the points of entrance to exit, and a half-inch under the torn surfaces, then that suture would include a rectangle three inches long and one inch wide. We know that when a suture is tied it becomes almost an exact circle, provided the tissues are of ordinary mobility. Since the tissues at the lower or external ends of the rectangles are less mobile than those above, it follows that, as the sutures are tied, tissue is pulled down and approximated in such a manner as to reinforce the structures at the site of injury. Or, to put the statement in another way, a comparatively long wound becomes shorter and broader, producing a stronger pelvic floor and perineum.

In case of a complete tear the technic is different, but the principle of pulling down tissue from the lax septum above, is maintained.

If the septum is not torn more than an inch, or an inch and a half, the needle, armed with silkworm-gut, is entered on the left side, transfixing the end of the divided sphincter; it is then carried up under the torn surface, parallel with and not far from the edge of the torn rectal mucous membrane, until the apex of the tear in the septum is reached. The needle is then carried laterally through the septum between the vaginal and rectal mucous membranes, and down on the right side through the end of the sphincter, to correspond to the opposite side. To complete this circuit with an ordinary needle, it is necessary to bring the needle out and to re-enter at some intermediate point. With a well-tempered perineal needle it is possible to complete the circuit at one sweep. When this suture is tied, it unites the ends of the sphincter and pulls the edge of the septum well down against the sphincter, making an effective closure. It is entirely unnecessary to suture the torn rectal mucous membrane. The succeeding sutures are placed parallel to the first, and it is seldom that more than six are needed. This method gives a union so substantial that the bowels may be moved daily without misgivings.

In case the tear in the septum extends so high that its edge cannot be pulled down to the sphincter, the method must be modified. The tear in the rectal mucous membrance is closed first with a continuous catgut suture. Beginning at the upper end, the injury to the vaginal tissues is repaired down to a point about an inch and a half from the lower end. Then silkworm-gut is used to unite the ends of the sphincter and to pull down the restored septum, as previously described.

In conclusion, I would like to state that these methods have been utilized in my practice for a number of years.

MELROSE BUILDING.

MEDIAN EPISIOTOMY IN PRIMIPAROUS LABORS.*

BY

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It is a continuous marvel not only to the tyro in obstetrics but even as one's experience grows, that a baby is ever born without more serious damage to the lower birth canal. The tissues of the levator ani muscle and of the more superficial urogenital septum are physiologically capable of remarkable stretching, if it occurs slowly, intermittently, and with sufficient surface lubrication. Without proper lubrication not only are the superficial epithelial tissues abraded, but a glacier-like pulling on the deeper structures is produced, rending this union between the layers. Notwithstanding the established efficiency of dilatation in these parts, we are compelled to recognize the fact that the more closely we inspect the birth canal after delivery, the more constantly shall we find more or less damage to the soft tissues. Definite lacerations of the lower birth canal requiring repair, in the experience of the New York Lying-in Hospital, occur in about 44 per cent. of all primiparous labors, and in about 10 per cent. of all multiparous labors.

Undoubtedly in certain primiparæ in whom on careful examination no surface laceration exists, some break in the continuity of the deeper structures may take place; this may involve fascia, muscles, and their attachments. It also must be admitted that a good percentage of primiparæ come through their normal labors with vaginæ that are intact for all functional and mechanical purposes.

Would a neater end-result be obtained in the latter cases by doing an episiotomy before they were stretched to their full capacity? In the ones that do tear, would a better union with less scar tissue be assured by episiotomy? There is much conflict of opinion on the entire subject. Good authorities claim that it is not possible to foretell a laceration and that lacerations heal as readily, and are as easily repaired, as an incision. Equally good authorities, with perhaps sounder surgical grounds, maintain the opposite. There is also some difference of view as to whether the incision should be in the median raphe or placed laterally.

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Some operators, in their eagerness to avoid a tear, consider that as long as the fetal heart remains of good quality an indefinite time can be allowed for the termination of the second stage. I am a firm believer in taking things slowly, to avoid laceration of the soft parts, as long as an appreciable advance of the presenting part continues. But the welfare of the baby must constantly be kept in mind. The head cannot be permitted to pound ineffectually on a too resistant vulvar barrier. Every now and then a baby comes to autopsy with a large cerebral hemorrhage, or the small punctate hemorrhages of asphyxia in the brain, liver, and other organs generally, in mute evidence of too long delay in the latter part of the second stage. We should not, to use a sporting phrase, play the baby's heart against the perineum. The odds are not even, or proper. In many such instances, a properly timed episiotomy would have saved a baby's life. Laceration or incision, and the head, that may have been delayed on the perineum for over an hour despite good contractions, slips through with the next pain. Episiotomy thus not infrequently will obviate the indication for the low forceps operation.

There is no question as to the difficulty in deciding when a laceration is inevitable; and, unfortunately, judgment here does not always come with experience. Other things being equal, however, and granting the absence of such conditions as a narrow pubic arch, disproportion of the presenting part and passage, edema, or inflammatory conditions of the vulva, all of which usually presage a tear of the perineum, a sign that has been of real assistance to the writer is the inclination of the vulva as bulging begins. The more nearly vertical the vulva is as it begins to gape, when the woman is lying on her back, the less a perineal laceration is to be feared. But when the perineum shows pronounced distention near the anus, and the anus dilates early, while the tissues about the vulva lie flat, laceration is likely to occur. The glistening appearance of the perineum stretched to the utmost, described by the text-books, also is never to be disregarded.

It is somewhat of a contradiction of terms to say that the obstetrician avoids a laceration by doing an episiotomy. Nor should we argue that we avoid a deep laceration by making a superficial cut. The serious subsurface lacerations of the levator ani and those of the vaginal wall running up to the fornix, of course, will not be prevented by an inch-long epsitomy of the fourchette, whether performed early or late. The more extensive vaginal lacerations usually occur during forceps operation, craniotomy, or a rough breech extraction. Before we approach any of these, in my opinion, we should make a careful, prolonged, and thorough manual dilatation of the levator, remembering that it is important to dilate gradually, intermittently, and with liberal lubrication. Green soap is the best for this purpose. In certain cases, on account of a narrow, bony outlet, great rigidity of the soft parts, disproportion or emergency, it may be advisable to make deep vaginal wall incisions in the levator ani, going up in one or both of the vaginal sulci. This incision should be preceded by a median incision of the raphe, going down to the sphincter ani, then swerving to one side and continuing up the lateral sulcus in the manner about to be described.

The median incision of the raphe anterior to the sphincter cuts chiefly the central points of insertion of the superficial group of muscles constituting the urogenital septum. Of the levator ani, it cuts only the so-called Lushka fibers, those few fibers running across between the sphincter ani and vagina. I have used both the lateral and the median incisions in the perineum, and it has been my experience that a better union is obtained with less rugged scar tissue and with better preservation of function, with the median incision than by severing laterally the transversus perineii and bulbocavernosi muscles across the continuity of their chief muscular portions. What we gain by episiotomy is this: if laceration of the perineum impends, we avoid a jagged or transverse splitting, or butterfly tear, by making a single straight clean-cut incision. We turn the lower end of the incision away from the anus and avoid injury to the sphincter ani. If the vulva is holding the head on the perineum, despite good pains, a properly timed episiotomy will prevent serious asphyxia of the child from prolonged pressure on the head with its attendant cerebral hemorrhage.

The simple median episiotomy is employed only during the perineal stage of labor. Use ordinary light blunt-pointed cervical scissors curved on the flat. Place the forefinger in the vagina during a pain. About half an inch inside the distended margin of the perineum will be felt a tense band, corresponding to about the location of the hymenal ring. With the middle finger and thumb press the anus to one side and introduce the scissors with the curve pointing in the opposite direction. Start the incision in the midline severing the tissues of the urogenital septum in the median raphe for about three-quarters of an inch. It is desirable to have the incision extend farther on the vaginal, than on the skin surface of the perineum. As the scissors close, the incision will curve slightly away from the anus. This swerve at the lower end of the incision will meet the chief objection to median episiotomy of the lateral incision enthusiasts, who have much to say on the danger of the median cut extending into the sphincter ani. If more room is required, or if the levator ani is not well dilated, and it is necessary to make an emergency delivery notwithstanding, continue the incision, vaginally, in the line of what will be the vaginal sulcus aside of the rectum. The incision is best made with successive snips rather than with one bold cut.

The repair can be made satisfactorily with a few buried sutures of twenty-day chromic gut, and the margins of the wound may be brought together with interrupted or continuous subcuticular sutures of the same material. Except in the smallest incisions, it is best to do the repair after the completion of the third stage.

By careful observation episiotomy will be found to be of avail in about one-third of all primiparæ. I have never regretted the procedure in any case in which I felt the necessity of doing it.

There is nothing very new in this operation. Michaelis wrote about it in the eighteenth century, recommending a median incision in the raphe, and calling it episiotomy. Of recent years Anspach of Philadelphia and Pomeroy of Brooklyn, have advocated its extensive use, and the effort of this present discussion is to emphasize it as a simple and resourceful help in delivery, to be more frequently used in delay in the perineal stage of labor.

108 EAST SIXTY-FOURTH STREET.

OBSERVATIONS ON THE PROBLEM OF HEMORRHAGE IN OBSTETRICAL CASES.*

BY

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THE object of this paper is to call attention to a very few points relative to hemorrhage associated with obstetrical cases and to make certain suggestions for measures which are, for the most part, prophylactic in their nature. I am prompted by a realization that the maternal mortality has been unnecessarily high in cases of antepartum hemorrhage, including placenta prævia and complete separation of the normally situated placenta; and that postpartum hemorrhage is unnecessarily frequent, though, to be sure, not commonly fatal. In both of these varieties of hemorrhage it is possible, by more definite precautionary measures, to reduce the mortality of the former and the frequency of the latter.

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In the cases of antepartum hemorrhage the cause of mortality, leaving out those cases of sepsis due to hasty and careless methods of controlling the hemorrhage and of delivering the patient, is loss of blood. Deaths from hemorrhage have been due, (*a*) to unwise methods of delivery, and (*b*) to delivery of patients who are in no physical condition to stand the delivery on account of previous loss of blood.

The more general adoption of Cesarean section for the delivery of cases of placenta prævia and accidental separation of the placenta, has resulted in a considerable reduction of the maternal mortality over the older methods, such as accouchement forcé, and abdominal hysterotomy is to be strongly recommended. However, even with improved methods of delivery, the result may be disastrous if the patient's condition at the time of delivery, is such as to make her a bad operative risk. The patient rarely dies undelivered; but the physician, knowing that only with the emptying of the uterus will come the final cessation of hemorrhage, altogether too frequently hastens to empty the uterus of a patient already nearly exsanguinated, and then uses all his resources to combat postpartum hemorrhage which is almost sure to follow. I hold that postpartum hemorrhage is almost certain to result in such cases because, even in the absence of deep laceration of the cervix and injury of the placental site of the uterus, bleeding will follow from relaxation of the uterus as a result of previous loss of blood. Nowhere in medicine is the vicious circle better illustrated than in the case of postpartum hemorrhage.

In the most serious cases, other methods have been tried without success. The only means of restoring the lost tone of the uterus, and controlling the bleeding, is the introduction of blood into the circulation of the patient. This may save her life, if there is still time left for performing the transfusion. However, we are then dealing with a problem of life and death which no obstetrician would choose to confront. I wish to lay especial stress upon the use of calm judgment in undertaking the delivery of such a patient and to emphasize the fact that, inasmuch as we are dealing purely with a problem of hemorrhage and know that some additional bleeding will surely accompany the delivery, it is our duty, first of all, to fortify the patient in the most thorough and lasting way at our command; and then, and only then, to undertake the emptying of the uterus.

For restoring the patient to a more normal condition, no method can compete with that of blood transfusion. The simplification of transfusion technic, and the more general familiarity with its employment, make it a practical procedure. The transfusion should be begun before the delivery and carried on, as nearly as possible, simultaneously with it. Transfusion should not be used as a last resort if, in the physician's judgment, the patient has lost an amount of blood which, added to that which she must necessarily lose with the delivery, will in the least endanger her life. By this practice, which we may call prophylactic blood transfusion in obstetric cases, the patient will stand the delivery comparatively well; and the mortality, which from various statistics has been put at figures varying from 9 to 35 per cent., may be reduced to 2 and even 1 per cent.; or, in other words, to the mortality of the operation used for delivery.

My first experience with this procedure, seven years ago, in July, 1912, proved so satisfactory, and so well illustrates its advantages, that a record of the case is herewith given:

The patient, a primipara at full term, complained only of a slight "show" and of feeling faint. When seen shortly afterward, she presented the following picture: very pale; pulse of very low tension and small volume; abdomen somewhat distended and tender; fetal parts only partially made out on palpation; fetal heart not heard; a moderate amount of "show." The case presented a typical picture of complete separation of the placenta with concealed hemorrhage. The patient was very carefully removed to the Maternity Hospital. The hemorrhage, which at first was nearly all concealed, became more and more external, and the patient's general condition grew worse. She gave evidence of having lost about all the blood which she could safely lose. Two facts were apparent: first, that the patient must be delivered as soon as possible; and second, that in her condition she had a poor chance of surviving the delivery. The following procedure was adopted: first, a blood transfusion was performed by Dr. H. G. Sloan, the older method of direct anastomosis with a Crile cannula being used. Immediately after the beginning of the transfusion, the patient was delivered by an abdominal hysterotomy so that the transfusion and the delivery were carried on simultaneously, and the former continued slightly after the uterus had been sutured. The patient's condition was kept absolutely under control throughout the delivery, and at no time were there alarming symptoms of hemorrhage. She was in good condition after the completion of the operation and made an uneventful recovery. The baby was, of course, dead as a result of the complete separation of the placenta. The outstanding feature of this procedure was the continuous safety of the patient, made possible by the simultaneous performance of the two operations, a marked contrast to what probably would have happened if the delivery had been undertaken primarily with a consequent postpartum hemorrhage.

The writer had adopted a similar procedure since then, in cases of this kind, using newer methods of transfusion, but always making the transfusion, as nearly as possible simultaneous with the delivery.

Postpartum hemorrhage, occurring in cases otherwise normal, not infrequently has its beginning in the third stage of labor; no doubt it is sometimes due to improper management of this all-important stage, either by too hasty efforts at manual expulsion of the placenta, or through lack of effort toward promoting contractions.

The more general use of anesthetics in obstetric practice makes it imperative to take unusual precautions against the occurrence of postpartum hemorrhage. Although anesthetics vary in their relaxing effect, this being somewhat greater in the case of ether than in that of N_2O_2, nevertheless, all anesthetics cause more or less of a relaxation of muscular tissue, and the uterine muscle does not escape this effect.

We cannot countenance the practice of allowing the third stage of labor to take care of itself and of paying little or no attention to the fundus of the uterus. The fundus should be watched constantly and stimulated manually, if it relaxes; but this alone is somewhat insufficient in obtaining the best results. While the administration of ergot during the third stage has long been considered contraindicated, the same cannot be said of pituitrin. Instead of bringing about a tonic contraction of the uterus, we observe somewhat normal but intensified intermittent contractions of this organ; though, to be sure, the relaxation between the contractions is less than in cases in which pituitrin is not given. Again, the effect of pituitrin is very fleeting and wears off before the time the placenta is ordinarily delivered.

The writer has, of late, followed a routine practice of administering pituitrin during the third stage of labor; and from an experience of over one thousand cases treated in this way, he can say that the results are most satisfactory. Compared with those cases treated previous to this time, in which nothing was administered during the third stage of labor, there is a marked contrast between them in the amount of bleeding; so much so that cases of real postpartum hemorrhage are practically unknown where conditions are otherwise normal. In the series of cases mentioned, it can be said that not a single one was observed in which the placenta was retained on account of the administration of pituitrin. Manual extraction of the placenta was resorted to in only three cases; in these the placenta was actually adherent, and not merely retained by the contraction of the cervix. We have, therefore, not the slightest fear or hesitation in administering pituitrin at any time during the third stage of labor;

and, furthermore, we would urge the routine practice of administering pituitrin in the third stage of labor in all cases in which a general anesthetic has been administered.

The routine practice is as follows: All patients are delivered under complete anesthesia. As soon as the baby is born, pituitrin is administered hypodermically; usually a full cubic centimeter is given. The uterus is, however, as carefully watched as if no pituitrin had been given. Immediately after the birth of the placenta some preparation of ergot is given. Our custom has been to administer ergotole intramuscularly. The pituitrin controls the relaxation of the uterus during the third stage; the ergot causes a more tonic and lasting contraction after the uterus is entirely empty. While the occurrence of severe postpartum hemorrhage is not common, and in all likelihood the administration of pituitrin and ergot, as described routinely, is not of great necessity in most cases, still, an ounce of prevention is worth a pound of cure and we feel that, inasmuch as no untoward effects are obtained from this plan, its more general adoption should be advocated.

In conclusion, let me emphasize the two chief points brought out in what has been said: first, the importance of better judgment in undertaking the delivery in cases of placenta prævia and in ablatio placentæ, and the value of the "prophylactic blood transfusion;" second, the value of the routine administration of pituitrin in the third stage of labor to prevent postpartum hemorrhage.

THE OSBORN.

INVERSION OF THE UTERUS.

BY

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PROBABLY the most unique definition to be found for this anomaly, would be: *the uterus is upside down, and inside out;* that is, the fundus uteri becomes the lowest, and the cervix the highest part of the organ and the external surface becomes the internal.

Frequency.—Jardine(1), the Glasgow Maternity Hospital, found that this accident occurred three times in 51,290 cases. Winckel(2) had not seen a complete inversion in 20,000, nor Braun a single one in 250,000 cases. Denham had seen one inversion at the Rotunda Hospital, Dublin, in 100,000 cases.

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At the Petrograd Lying-In Hospital, one of the largest of its kind in all Europe, Beckman(3) had not seen a single case in 250,000 deliveries, while Madden(4) had observed it but once in 190,000 labors in Dublin. W. C. Jones(5), after a study of collected figures, shows an average of one case in 127,767 cases.

Records collected from the maternities of Detroit institutions, or those from which any statistics could be obtained, show the follwing:

Grace Hospital reports, 4247 confinements during the last twenty-eight years, with one case of complete inversion. Harper Hospital, in the last three years, has had 2100 obstetrical cases, with no inversions of the uterus. The Woman's Hospital has had 8600 confinements without inversions of the uterus. Providence Hospital has had, since 1909, 7200 confinements, without a single case of inversion of the uterus in this series. One case, however, of complete inversion of this organ was brought into the service after the patient had been delivered at home.

With relation to the foregoing statistics, it is evident that they have been collected from large maternity clinics and that they are valuable as far as they go but they do not indicate the frequency with which inversion may have occurred in women who are confined at their homes. The majority of these large clinics are so organized that the best possible technic is in effect, and all assistants are subject to orders from the heads of their departments. We should therefore expect a far greater number of inversions among those treated individually in their own homes and by men who are either ignorant or careless of proper prophylactic measures for its prevention. It is, therefore, impossible to obtain true statistics in this latter class, inasmuch as the greater proportion of physicians make no reports of them and, indeed, make no personal case records at all; and so while Jones, in his study of collected figures, shows but one case in 128,767, this cannot be a criterion of inversion of the uterus found in private practice. Kehrer(6) places the frequency of all cases as one in 2000 which, indeed, seems to me to tally more perfectly with what we might expect.

In talking with my colleagues and hearing of their experiences with other physicians in general, I conclude that this complication is a rare one, though not nearly so infrequent as the above figures would indicate. There are those rare instances in which inversion takes place spontaneously in the third stage of labor which is no reflection upon the attending obstetrician but, in general, the reverse is true, and we find its presence is usually attendant upon cases cared for in their homes by men unskilled in the obstetric art.

Varieties.—According to the degree of displacement, inversion of the uterus has been divided into three varieties. The first degree consists of a simple dipping-in or cupping of the fundus. The second degree consists of those instances in which the fundus descends below the *os uteri.* The third degree is made up of those instances in which the inversion is complete. This latter condition may be so exaggerated that the vagina is partly inverted with it, and the uterus drags down the tubes and ovaries, making a complete uterine inversion with prolapse.

Etiology.—Two or three factors are necessary for the production of this phenomena: pressure from above and traction from below, together with a localized atony or thinness of the uterine walls. Some of the exciting causes are the implantation of the placenta at the fundus, submucous fibroids (which have become pedunculated during pregnancy) and manual extraction of the placenta. The latter has been known to be an exciting factor in several instances, and is probably due to the negative pressure set up by removal of the hand from the uterus, together with a thinned fundal area and pressure of the hand from above. The weight of a large placenta, attached at the fundus, may be an exciting factor when associated with marked uterine atony; in instances of this kind, the fundus assumes a cup-shaped character and, as it descends, it becomes a foreign body. In the process of time, the remaining portion of the organ becomes active in its contraction and endeavors to expel this depressed portion in exactly the same way, and for the same reason, that it did to expel the child.

Exceptional instances of spontaneous inversion have occurred as a result of intraabdominal pressure. Other causes include delivery with the mother in a standing posture; a short umbilical cord, or a cord shortened by being twisted about the child's neck or body; hard coughing, sneezing, etc., at the end of a long wearisome labor. The three most important causes, purposely placed last in this series are: first, too early adoption of the Credé method or its improper use; second, traction upon the cord; and third, a combination of the first and second causes.

We cannot escape the fact that the majority of inversions of the uterus are due to faulty technic. There are those rare instances in which inversion occurs two or three days after delivery in the care of competent well-trained obstetricians; but these are few. We are not interested in that class. But our interest is challenged in the ninety-nine cases which are directly traceable to poor technic in delivery.

J. M. Monro-Kerr(7), Glasgow, states that in making a review of English and Continental literature for the years of 1903–1905, twenty-three cases of inversion were reported and, in examining them, it was very evident that in the majority of them the occurrence had followed pressure from above, or traction from below, or both. Williams says that this accident is scarcely ever seen when labor is properly conducted.

Out of 100 cases, tabulated in a given series, only three were delivered in hospitals. These tabulations, however, are from large clinics where the technic of delivery is controlled by a single individual. It occurs to me that the injudicious use of large doses of pituitrin may be a predisposing etiologic factor.

Symptoms.—Inversion of the uterus is followed by alarming shock and hemorrhage, dependent upon the degree of inversion present—the more complete the inversion, the more profound the symptoms. The heart may be very seriously affected through reflex action. Hemorrhage is always a prominent symptom, and, in the recent case, demands immediate and effective attention. When the inverted uterus remains in the inverted position for a considerable time, the contraction ring, created by this re-duplication, may shut off the circulation sufficiently to cause gangrene of the portion lying beyond the contraction.

Diagnosis.—If the obstetrician is in attendance at the time inversion takes place and when the inversion is sufficiently extensive to cause protrusion of the organ from the vulva with the placenta attached, the diagnosis is easy; but in instances where the inversion is incomplete, a very careful examination must be cautiously made. To this end, the bladder should be emptied first; for, should the inversion have existed for two or three hours, or more, there will be a marked retention of urine and a well-filled bladder might be mistaken for the fundus uteri. With this precaution, the patient anesthetized, one hand above the symphysis and the other in the vagina, the true pathology will be revealed.

Prognosis.—According to Crosse(8), one-third of the women having inversion of the uterus die either immediately or soon after the accident has occurred. Death may be the direct result of shock or hemorrhage; or, as is the rule, a combination of the two. When death does not follow immediately, many of these cases die of infection. All of these conditions prove that inversion of the uterus is one of the gravest of obstetrical accidents.

Treatment.—As regards prophylaxis, it cannot be too strongly emphasized, first, that the cord should not be dragged upon; second, that Crede's method of delivering the placenta should not be injudiciously practiced; third, that the fundus uteri should never be so pressed down upon as to cause indentation; fourth, that, in my opinion, it is of the greatest importance that Crede's method should never be employed, except when the uterus is in contraction; and fifth, that the obstetrician should remain with the patient until firm and permanent uterine contraction has been established.

The more recent the inversion of the uterus, the more surely and safely it can be reduced. In the twenty-three collected cases of Monro-Kerr's, referred to above, all were treated by competent obstetricians; yet in three cases the organ, was not restored, and in four cases replacement was accomplished with difficulty. Therefore, it is evident that considerable patience and ample time are required in efforts at replacement of the inverted uterus. In instances where the uterus is open and flaccid, restoration can usually be made by introducing one hand into the vagina, with its closed fingers and thumb pressing upward on the most dependent portion of the displaced organ and, with the other hand upon the suprapubic region, giving such assistance as the pressure from below would indicate. In the latter case, where some time has elapsed between the accident and attempts at replacement, Bandl's ring will often be found firmly contracted and this is the greatest obstacle to be overcome. Considerable time, with the use of gentle force in the efforts at reduction, will usually be productive of good results. If we attempt this maneuver too hastily, rupture of the uterus may be caused by the hand within the vagina. Time, gentle force, and patience will, as a rule, tire out the muscles forming Bandl's ring, and permit the desired restoration of the inverted organ.

In rare instances, these manipulations can be carried out without the aid of an anesthetic on account of the existing shock having obtunded the patient's sensibilities; but, in the general run of cases, full surgical anesthesia with patient in the partial Trendelenburg position will be necessary to secure the desired result.

The best authorities differ in opinion as to whether the portion of the uterus first inverted should be the first, or the last, to be replaced. It seems that this would depend, principally, upon the time elapsing between the accident and attempts at replacement. In cases where the placenta remains attached, and when it is possible to replace both placenta and uterus together, this method should be followed.

When only parts of the placenta remain attached, they should be removed, the area will disinfected and the uterus replaced as just described. When the uterus has been in a state of subacute inversion and considerable involution has taken place, adhesions will have been formed sufficient to make the manipulations referred to inapplicable and impossible. When the obstetrician is confronted with cases of this kind, some type of radical operative intervention becomes necessary.

Kuestner's operation for the relief of this condition consists in opening Douglas' pouch, inserting the left index finger through the opening, and then into the cup-shaped inverted uterine fundus. If the fundus of the uterus be outside of the vulva, the inverted portion will appear uppermost and, therefore, easily accessible to the operator. A longitudinal incision in the medium line, dividing the cervix at the inverted ring, is carried up through the body of the uterus to the fundus. With the freedom of structures thus obtained, the organ is easily re-inverted and restored to its normal position by the finger remaining in the cup-shaped portion, while the thumb pushes the fundus upward. The fundus is now drawn through the posterior incision in Douglas' pouch, where the uterine wound is sewn together and the organ returned to the pelvic cavity.

Spinelli's operation is very similar and answers the same purpose; but the incision is made through the anterior vaginal wall transverse to the cervix. As in anterior colpotomy, the bladder is pushed up and, after admission to the pelvic cavity is gained, the other details are followed exactly as in the Kuestner operation.

Case Report.—On April 10, 1919, at 1 A. M., Mrs. C. B. gave birth spontaneously to a baby girl, at full term, after a moderate labor of ten hours' duration. The physician in charge, who referred the case to me, waited one hour for the delivery of the placenta; it refused to be born. He made pressure upon the uterus from above and traction upon the cord from below. This resulted in complete inversion of the uterus so that the fundus presented below the vulva. The patient was left in this condition until the following morning, when an attempt was made to reduce it. The effort was futile. The patient was allowed to remain at home nearly all of that day. At eight o'clock in the evening of April 11, she was sent to the hospital, where the writer first saw her. Thus a complete inversion had existed for twenty hours. The patient was a robust woman of the working class, and presented a ghastly appearance, caused by the severe shock and the uninterrupted loss of blood from the time the inversion took place. Temperature, 97.5°; pulse, 140; blood pressure, 110 systolic, and 90 diastolic. A blood count, made after she was in bed, showed 1,500,000 reds, hemoglobin, 40 per cent. It was evident she had bled to an alarming degree. This bleeding, coupled with severe shock, made the prognosis rather grave. However, the patient was placed upon the operating table, and ether administered to complete surgical anesthesia. Hypodermoclysis under the breasts was at once instituted. An examination revealed the inverted uterus between the patient's thighs. The placenta had been almost entirely removed. The entire endometrium was bathed with ethereal soap and sterile water; this was followed by a 2 per cent. solution of iodine. The patient was then placed in a partial Trendelenburg position, the obstetrician's left hand was inserted into the vagina and, with the fingers and thumb extended, the uterus was pushed up, care being taken that the force from below was made in the long axis of the pelvis, the hand above becoming of equal importance in its effort to replace the organ after the part below was pushed up above the fundus, where the right hand successfully assisted in drawing the uterus upward. The maneuver was similar to that which the hand assumes when milking a cow. About fifteen minutes of gentle manipulation succeeded in forcing the inverted fundus of the uterus through Bandl's ring, which was the chief obstacle to its replacement. Several pieces of iodoform gauze, 2 inches wide and 1 yard in length, were separately packed into the uterus and left in such a manner that they could be removed singly, beginning with the lowest piece, at the end of thirty-six hours, thus preventing a recurrence of the inversion of the uterus.

Very little ether was required. The patient was placed in bed, with her feet elevated, and was given the Murphy drip, consisting of tap water, soda bi-carbonate, and glucose. She remained in the hospital sixteen days. Her recovery was uneventful. A mild infection manifested itself, but disappeared after two or three days.

1229 DAVID WHITNEY BUILDING.

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THE CYSTIC OVARY.*

BY

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A MODERATE acquaintance with the cystic ovary, gleaned through serious and earnest attention whenever the condition was encountered during an abdominal section, has led me during latter years into a different channel of reasoning relative to the treatment from which I entertained during former years.

The cystic ovary, which is being considered in this argument, is not the organ which has suffered from a microbic invasion; but the organ which, through adverse influences, reasonably assumed to be mechanical in their nature, has suffered changes in its stroma and epithelial structure that have carried it beyond recognized physiologic limits. Furthermore, this argument is confined to ovaries belonging to unmarried women, ranging from fourteen years to twenty-five years, where the cystic degeneration was discovered during an abdominal section performed for a lesion not in any way associated with the ovary.

The anatomical privileges which the ovary enjoys create opportunities that are particularly prone to bring disaster to the organ. For instance, it is, apart from the fimbriated extremity of the Fallopian tube, the only organ situated within the peritoneal cavity bereft of any peritoneal covering. At its attachment to the broad ligament a jagged line, visible to the naked eye, marks the meeting of the layer of cylindrical epithelium cells of the ovary. This line is arranged like a beautiful mosaic, with those of the flatter endothelium of the peritoneum. Another strange feature of which this small organ can boast, is its lavish and interesting blood supply. The arteries, six to eight in number, running between the folds of the broad ligament, are twisted like a corkscrew.

This appearance is maintained in the stroma itself, in which they are most abundant at the boundary of the parenchyma layer. The veins, akin to the pampiniform plexus, form a dense coil in the hilum and by their size give evidence of great import in promptly relieving the organ of a superfluous blood supply at any time when the physiological balance seems threatened.

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*Read at the Thirty-second Annual Meeting of the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15–19, 1919.

A third feature, absolutely devoid of any aid to the organ in the face of impending danger, is the laxity of its connections and its subjugation to the changing relations of the contiguous viscera. The ovary is, in a great measure, dependent for its well-being upon the conduct of its associate, the uterus. Many of the mishaps befalling an ovary can be, indirectly, ascribed to a changed attitude of this organ. It is this changed position of the uterus which is to a great extent, responsible in bringing about a cystic degeneration. Slight as the deviation may be, if maintained for sometime, the ovary, on account of its lax attachments, will be forced into a position not conducive to a normal coping with its blood supply, and an engorgement of the organ will result. This engorgement, unless the uterine deviation should correct itself, will gradually burden the tottering ovary with an additional weight which its meager supports, especially the mesovarium, will not be able to sustain adequately and the organ will suffer a displacement below its normal position. In its descent, owing to its attachment near to the cornual angle of the uterus by the ovarian ligament, the ovary will necessarily be brought nearer to the middle line. The position in which the ovary thus finds itself is an unfortunate one on account of its arterial and venous circulation. It is in this prolapsed state of the ovary that the true pathologic changes first begin to manifest themselves.

In so delicately constructed an organ as the ovary, whose extraordinary function constitutes one of the most puzzling and most interesting problems in physiology, it is reasonable to assume that *drastic* impairments in its vascular supply are not necessary to bring about textural changes. Mild disturbances, if they persist long enough, are all that are required to change normal into abnormal conditions. The whole picture appears to me to be somewhat analogous to the changes the surgeon sees in a partially strangulated intestine. It seems wholly a mechanical condition in which the circulation plays the principal part. Textural changes in the tissues are brought about, not by an inadequate supply of arterial blood, but by an embarrassed venous circulation bordering on stasis. Such changes in an organ as intricate as the ovary, where the growth potentialities of the cells are so astoundingly pronounced, are a consequence of tension and a certain degree of torsion of the mesovarium at its broad ligament attachment. We are all familiar with the consequences of a prolonged hyperemia. The assumption must be granted that a sustained hyperemia of the ovary will, eventually, produce tissue degeneration; and the clinical interpretation must be that inflammatory processes are taking place. This type of inflammation in the ovary, however, is not that of an infectious process; it is rather the outcome of an excessive irritation of the cellular elements stimulated into a hyperactivity. Nevertheless, pathologic changes are engendered, and the individual structures become alike responsive to the morbid impetus.

A general increase in the size of the organ, with a tendency to a globular form, becomes apparent. The tunica albuginea presents a well-marked thickening, and although the stroma cells have not lost their distinctive structure, they have become hyperplastic. The parenchyma also shares with the interstitial tissue changes, and a marked diminution in the number of primordial follicles and an abnormal tendency to atresia become discernible. Furthermore, degenerative changes in the blood-vessels become evident, causing them to appear as hyaline masses. From a histologic point of view, the gland structure presents its most interesting zone immediately below the tunica albuginea, where it is condensed into a kind of cortex, harboring multitudes of small vessels called ovisacs, or the follicles of DeGraaf. In these follicles the ova are developed. The majority of these ovisacs are of microscopic size. However, as they ripen and approach the surface of the ovary, they may attain the size of a large white currant. By an increasing vascular congestion of the ovary, the increased tension in the organ forces the ovisac to the surface. This increased tension causes an interference with the circulation in the follicle resulting in necrotic changes at the stigma, where rupture finally occurs. Normally, rupture of the ovisac leads to scarring of the albuginea, and the empty capsule slowly disappears when impregnation of the ovum has not occurred. However, if fertilization of the ovum does take place, the empty vesicle undergoes a remarkable development under the influence of the increased vascularization of the organ, and a yellow plicated body, known as the corpus luteum, is formed. However, conditions may arise, and they must be ascribed to consequences of hyperemia in a physiologically mature follicle, which failed to rupture, either because the ovum has not progressed toward the free surfaces of the ovary, or because of the ovary, the tunica albuginea, has become thickened through textural changes, which prevented rupture. In such an instance the secretion of the follicles, the liquor folliculi, remains confined within the vesicles, and in this manner gives rise to the formation of a cyst called hydrops folliculorum graafii.

Recent investigators admit that atresia of the follicles, and a certain degree of cystic formation in an ovary during the menstruating period of life, are physiologic. Granting this admission, the question arises: When has this form of cystic degeneration reached its physiologic limits? The answer must be guarded for the following reasons: 1. Cystic degeneration of an ovary seldom mirrors a definite clinical picture. 2. There is rarely severe pain, and the menstrual disturbances, should there be any, are of the ordinary type. 3. Should there be pain, it must be ascribed either to torsion of the mesovarium, engorgement of the veins of the broad ligaments, or the presence of adhesions. 4. A bimanual vaginal examination, when the ovary is enlarged and lodged in the cul-de-sac, will elicit pain of a sickening character; but the examination will not reveal anything more definite about the organ unless multicystic follicular degeneration has caused the ovary to assume an unusually large size. This is a rather rare occurrence, inasmuch as a hydrops folliculi does not tend to grow indefinitely, like a cystic tumor. It may be stated here that a rectal exploration under anesthesia, with two or three fingers in the bowel, will often prove more satisfactory in these cases, than a vaginal examination. Nevertheless, no matter how thorough and how expert the examination, the pain and tenderness elicited in the ovarian region are not sufficient ground for a positive diagnosis of cystic degeneration.

Referring to my personal experience with this condition, I frankly admit that the diagnosis was invariably made during an abdominal section for lesions other than ovarian. The operations were performed most frequently for chronic lesions of the appendix, or retrodeviation of the uterus. The patients, 200 of them, were all unmarried, varying in age from fourteen to twenty-five years. Although the cystic degeneration was frequently found to affect both ovaries, in the majority of the cases operated upon for chronic appendicitis, the lesion was confined to the right ovary in the ratio of about ten to one. This may be explained on the ground that the chronic inflammatory condition of the appendix precipitated an excessive and prolonged vascular supply in which the ovary was compelled to share on account of its nearness to the appendix. It may be of interest to state that, whenever this condition was encountered, the uterus was frequently found, apparently, in a normal position; at any rate, the retrodeviation was so slight that it could not be considered as pathologic. From this the inference is justifiable that a chronic appendix lesion may invite cystic degeneration of the ovary without concomtiant malposition of the uterus.

With this preamble concluded, what was done with these cystic ovaries?

It may be of satisfaction to the ultraconservatist to know that not all of these ovaries were resected, for only about one-half of them offered a pathology which, in my judgment, demanded resection. About one-half of the ovaries not subject to radical surgical procedure, were suspended as close to the cornual uterine angle as possible. In those instances where a malposition of the uterus was present—in the majority of cases it was a retroversion—the displacement was corrected by the simplest operative method; viz., that of shortening the round ligaments, and attaching the reduplication of this structure, with silk, to the anterior surface of the body of the uterus. In no instance of retroverted uterus was it deemed advisable to correct the displacement by operative procedures entailing severe trauma.

The same delicate operative measures were strictly observed in suspending the ovary. No extremes, such as buttonholing the broad ligament and passing the ovary through the slit, thus causing it to lie upon the anterior surface of the ligament (the Mauclaire-Barrows operation), were undertaken. No difficulty was encountered in returning the ovary from its prolapsed position and retaining it in the place selected for it. The ligament of the ovary, a structure composed of unstriped muscular fibers, affords an excellent aid in obtaining this purpose. When the ovarian ligament was found so extremely relaxed that a proper ovarian suspension could not be otherwise obtained, there was no hesitation in carrying the sutures through the sides of the uterine body near the cornual zone. The surgery pertaining to ovarian suspension should be confined to the median portion of the organ, as far remote from its lateral border as is feasible. The anatomical relationship of the fimbriated extremity of the tube and the ovary must be respected, as much as is possible, for physiologic reasons. The tubal mesentery is in close apposition to the tubal surface of the ovary and forms, between these two structures, a slit-shaped peritoneal space, the bursa ovarica. Destruction of this delicate anatomico-physiologic arrangement may create difficulties for the ovum, in gaining entrance into the Fallopian tube.

In those instances where resection was decided upon, the guiding principles were the large number of cysts present. An ovary which showed a moderate amount of cystic degeneration was not resected; but a prolapse or faulty position of the uterus was invariably corrected, and the future fate of the ovary trusted to the correction of the displaced uterus. Sometimes these chance methods have a favorable influence upon the organs, and the existing degenerative process becomes stationary, and remains so. Sometimes, however, and this observation I have made personally, a moderately cystic ovary, even after the associated conditions have been corrected, will eventually undergo a marked cystic degenerative process and cause the organ to assume proportions so as to make it readily palpable by either vaginal or rectal examination. The inference is clear. It can never be fully ascertained, by simply looking at an ovary undergoing cystic degeneration, to what extent the glandular substance of the organ is affected with these follicular dilatations. When during an abdominal operation an ovary is encountered which presents from five to eight cysts upon its free border, varying in size from a pea to a small hazelnut, which look at you as so many eyes with opaque corneas, that ovary is pathologic and is a proper one for resection. It is only logical to infer that, in instances of this kind, many more cysts are embedded deeper down and throughout the glandular substance of the ovary, and that their presence creates a pressure atrophy of the functional elements with the concomitant inhibitive efficiency of the organ. Simply puncturing these cysts and evacuating the light thin serous fluid, which may, in some cases, be brownish or blood-stained, is a procedure of little promise for an ovary in which cystic degeneration has gone beyond the physiologic limits. This procedure is not to be recommended for cysts projecting above the surface of the ovary, as it carries with it no assurances of good. The smaller cysts, grouped deeper in the glandular substance, where removal during resection is not deemed advisable on account of the great sacrifice of healthy ovarian tissue, may be punctured because the cyst is small, its walls delicate, and, furthermore, because it is the only surgical measure permissible.

An ovarian resection is a surgical procedure which requires earnest consideration. Unless this is fully appreciated, an ovary had better not be attacked. The harmful consequences following a surgical attack upon an ovary are not the result of a complicated or trying technic. An ovarian resection is the simplest of operative measures. The harmful consequences are usually the result of carelessness in the technic. It must be borne in mind that the ovary is not covered with peritoneum, except at the mesovarium, and that the organ is in contact with omentum and hollow viscera. The tendencies to the formation of adhesions in pelvic surgery are well known; means to prevent them are also fairly well understood; but, unfortunately, the earnest detail which carries with it the potent factor is often neglected. As a result, favorable conditions for pain, which have not previously existed, are being created. To make myself clear, an adhesion with the small intestine, or omentum, may occur with the minutest exposure of ovarian tissue at the site of resection.

In performing a resection properly, it is advisable to grasp the organ between thumb and index-finger of the left hand, and hold it securely rather than grasp it with a forceps and traumatize its structure. The incision is made with a very sharp knife, and a wedge excised at the most prominent part of the ovary. The cystic zone is included in its entirety, if possible. When the wedge is excised, the physician should see that the lateral portions of the ovary will meet in good apposition when the sutures are being placed. The apex of the wedge is carried close to the hilum so that a generous exposure of the internal architecture of the gland may be obtained. Bleeding may be considerable, but it is easily controlled by exercising pressure at the hilum of the organ with the thumb and forefinger.

A search for dilated follicles in the lateral segments is advisable, and the simplest manner of obtaining positive results is to cross-section each segment by one or several well-placed incisions. If cysts are encountered, they may be punctured or excised, according to their size or the ease with which they can be removed. The suturing of a resected ovary should be done carefully and with neatness, enough tension being exerted upon the sutures to insure hemostasis and good apposition of the wound. A round cambric needle, threaded with No. 0 iodized catgut, will answer the purpose admirably. The interrupted mattress sutures are placed through the body of the ovary. A simple running suture is used to unite the margin of the wound. The latter is a very important step in the operation. To make certain that no adhesions to neighboring viscera can take place, cover the suture line with peritoneum borrowed from the broad ligament. This is done by simply hooding the mesosalpinx over the suture line and securing it with two or three catgut sutures.

Conclusions: Without an abnormal position of the uterus, be it a retrodeviation or a descensus due to ligamentous relaxation, there is seldom a prolapsus of the ovary; without prolapsus of the ovary, there is no abnormal hyperemia; and without an abnormal hyperemia, cystic degeneration of the ovary is rare.

University Club Building.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

THIRTY-SECOND ANNUAL MEETING.

Held at Cincinnati, September 15-17, 1919.

In a Symposium on

THE WORK OF THE DETENTION HOME FOR WOMEN IN THE MANAGEMENT OF VENEREAL DISEASE, the following papers were read:

By Palmer Findley, M. D., Omaha, Neb.

THE WORK OF THE DETENTION HOME FOR WOMEN IN THE MANAGEMENT OF VENEREAL DISEASE.

(For original article see page 623.)

By C. C. Pierce, Asst. Surgeon General, U. S. P. H. S., Washington, D. C.

THE VALUE OF DETENTION AS A RECONSTRUCTIVE MEASURE.

(For original article see page 624.)

By A. J. McLaughlin, U. S. P. H. S., Sioux City, Iowa.

PIONEERING IN VENEREAL DISEASE CONTROL.

(For original article see page 636.)

By W. F. Draper, P. A. Surgeon, U. S. P. H. S., Richmond, Va.

THE DETENTION AND TREATMENT OF INFECTED WOMEN AS A MEASURE OF CONTROL OF VENEREAL DISEASES IN EXTRA CANTONMENT ZONES.

(For original article see page 642.)

DISCUSSION.

(Papers of Drs. Findley, Pierce, McLaughlin, and Draper.)

Dr. W. F. King, Acting Assistant Surgeon, U. S. P. H. S., Indianapolis, Indiana (by invitation).

The most complete experience in the control of venereal diseases has been that of the Army and Navy under military discipline under war time conditions. I have had the task for more than a year of attempting to direct the fight for control of venereal diseases under peace time conditions and I am not discouraged. I believe the plan now being carried on in most of the States of the Union offers more toward the solution of the venereal disease problem and toward the elimination of venereal diseases than any other plan yet proposed or undertaken.

There are just a few points brought out in the papers read that I wish to touch upon in the few minutes allotted. In the first place it is my firm belief that the most essential element in the control of venereal diseases from a peace time standpoint is that the medical profession should realize its responsibility in this work. For fifteen months, it has been the rule of the State Board of Health of Indiana, which rule under the laws of the State has the same force as law, that venereal diseases shall be reported by physicians. As a matter of fact, most cases are not reported. In the first fifteen months in which this rule has been in effect, less than 3000 cases have been reported for the entire State and fully 75 per cent. of these cases have been reported from the free venereal disease clinics operated in the State. The physician must realize that he becomes first aid in venereal disease control and should become in fact the personal health officer to every patient under his care.

In the second place I wish to emphasize what was brought out particularly in the paper of Dr. Draper, namely, that the Detention Hospital or Detention Home is absolutely essential and absolutely indispensable in any successful plan for the control of venereal diseases. It is a surprising thing that comparatively few hospitals in the United States, even those supported by public taxes, are open to acute cases of venereal disease, while the doors of every hospital are wide open to the end results of these diseases. It seems to me we must come to the logical conclusion that any hospital supported either in whole or in part by public funds cannot be permitted to close its doors against the treatment of acute cases of venereal diseases.

In connection with the clinics in the city of Indianapolis we have two wards in the City Hospital with the patients divided as to sex and color. It required five months, however, to secure the full coöperation of the City Hospital authorities in the treatment of cases in these wards. At the present time every patient admitted to the City Hospital with a venereal infection, whether this infection be associated with tuberculosis, cancer, maternity, etc., is sent over to the venereal disease wards and we have full and complete coöperation in the treatment of all cases. A Social Service worker is in charge of these wards and I have here a report of a study of cases admitted from January 1 to September 1, 1919. The report shows that a total of 77 women patients have been admitted to the venereal disease wards, 22 of whom came voluntarily, 55 being brought in unvoluntarily from a city court, criminal court and through our investigators. Just a few facts stand out prominently in this report. The large majority of these women, both white and colored, are engaged in house work and a very large percentage never completed the elementary grades in school work. It is shown also that at least 20 per cent. of the patients in these wards, and this applies to both men and women, are definitely feeble-minded. To treat these cases and turn them loose not only to become reinfected, but to perpetuate their kind is to establish a vicious circle and, of course, to accomplish no good results.

I have not time to take up the details of this report, but the facts as shown in the report prove that society is largely responsible for these conditions, and that our educational processes and Government processes are at fault and tend to perpetuate the very conditions against which this campaign is organized. In the final analysis, in addition to hospital care and detention for acute cases of venereal disease, the State must provide a place where feeble-minded men and women prostitutes can be segregated at least past the procreative period of life and be made to return something to the State for their care.

DR. ALBERT GOLDSPOHN, Chicago.—I feel the gentlemen who have so nobly given their time to fight these destructive diseases that become so horribly destructive under the exigencies of military mobilization deserve very great credit.

I simply wish to make a few remarks with regard to the technic and indication for applying medicaments to the cervical canal, the urethra and the endometrium, in non-pregnant women where the cervical canal is not widely dilated as in puerperal conditions or after advanced abortion, where you can introduce any kind of swab and deliver the active agent within the uterine cavity to the fundus. This cannot be done in the ordinary uterus where the cervical canal is not thus widely dilated. It will have to be dilated with very great difficulty in the ordinary case, and the processes of dilatation that would be needed in order to apply medicaments on a swab to the endometrium, would be contraindicated in a cervical canal that is infected with gonorrhea. Before we can begin to treat these disorders, we want first to understand how nature's own processes act in dealing with that infection. We know that the majority of cases of gonorrhea, especially in women, pass off comparatively easy and without serious injury because of the very effective barrier that nature interposes to the infection in the form of a viscid, tough, cervical exudate or mucus which it throws out in response to the invasion of the enemy. It is peculiar to the cervical canal only and never comes from the endometrium. The discharge from the latter is of a milky or creamy character, and never viscid. It arrests the gonococcus long enough to make it loose its virulence or vitality in the majority of cases. The very fact, as stated by Dr. Findley from his large experience, that only 2 per cent. of all those infected had any serious disease of the appendages, shows the efficiency of nature in shutting out gonorrhea from endometritis and salpingitis. If nature is so effective that it will do it in 98 per cent. of the cases, it behooves us, to respect it and not interfere with nature's processes. Our medication in acute gonorrhea should stop at the external os. There will come a time when this plug of mucus and these deeply hypertrophied and inflamed cervical glands will have to be dealt with without danger of infecting the endometrium and the tubes.

Dr. J. Henry Carstens, Detroit, Michigan.—The subject under discussion is a very large problem and I do not know how we will ever solve it. The papers by Dr. White and others have shown that women and girls after treatment go back, resume a life of prostitution, and become reinfected. They keep right on infecting somebody else. They are treated again, are cured, and return to a life of prostitution. These girls being feeble-minded you cannot do anything with them. If we did relieve these feeble-minded ones, we would get the next grade to deal with who are a little better than they are, but still may be feeble-minded. They take their places, and so it goes on and on.

I have often thought if we could not do something to prevent infection as in the Army by using a prophylactic salve which certainly has remarkable results in preventing infection in men. If we could use such a thing with women it might do a good deal of good. Necessarily, if very few women are infected, naturally very few men would become infected. There is only one thing to do as I see it, and that is to minimize these diseases, that is, prevent their occurrence by prophylactic measures such as were employed in the Navy and Army.

Dr. Francis Reder, St. Louis, Missouri.—My experience in reference to venereal diseases in the last ten years has been confined principally to its gynecological aspects. The cunning of these women, so far as my experience goes, is such that it requires careful observation to detect the manner in which they ply their trade. Many of them masquerade as manicurists, milliners and dressmakers. The difficulty in tracing such infected women resides in the clever manner in which they can deport themselves, especially when the laws of a city are somewhat lax and ill enforced. As one of the speakers has remarked, it rests to a certain extent with the doctor who is usually in a position to be able to trace and locate suspects, for it is the doctor who is treating these women and it is the doctor who can obtain their confidence if any one can. The inadequate laws of the municipality or rather their lax enforcement makes it difficult to act authoritatively. If these women could be placed under proper surveillance, or under arrest, if necessary, so that care, cleanliness and treatment could be fittingly carried out for the length of time necessary to effect a cure, much of the spread of this infection could be obviated.

In a detention home the difficulty arises in retaining infected women sufficiently long so that they can be pronounced cured. In our City Hospital we have not the authority to retain a patient if she wishes to be discharged. This handicaps the work very much.

Dr. Goldspohn in referring to preserving the natural barriers against such a disease is absolutely correct. When such natural barriers have been disturbed, it becomes imperative on part of the physician to see that this treatment will supplant these natural barriers in the best possible way.

COMMANDER WILLIAM SEAMAN BAINBRIDGE, New York City.—The enormity of this whole problem has been emphasized during my active service of over two and a half years in the Navy, much of the time abroad, to a more appalling degree than at any time in my professional life.

The other day, one of the most distinguished members of the Public Health Service said to me, in response to the question, "what do you consider to be the greatest asset which has come to America through the war?", the "placing in every small community as well as throughout the large communities, those who can be appealed to and will back up public and private hygiene." In other words, we need missionaries of health who believe that it pays to be healthful individually and collectively, and that certain things can be done in communities throughout the country now, as never before, provided the medical profession and the Public Health Service of the country will march hand in hand and coöperate thoroughly at this strategic time, with those in each city, town and village, who know that it pays to observe the essential laws of health.

This being true, the great facts of interest in health matters and propaganda along the lines in your papers, are certainly most timely. However, is there not another side which deserves our most serious thought? It has been affirmed that the two greatest factors in the prevention of immorality, is the fear of venereal disease on the one hand, and the danger of pregnancy on the other.

While progress is made in diminishing of venereal disease, is there not a possible danger of increasing general immorality? What has concerned some of us is the present method in Army and Navy of treating syphilis. Are we putting the external evidence beneath the surface only to have it crop out in the next genera ion? After the war, are we to have more hereditary syphilis to take the place of the primary and secondary type which has so often followed wars of other days?

There has been expressed often skepticism about the Wassermann test. May I ask for information on the following questions:

1. Of what value is the Wassermann test unaccompanied by any clinical signs or symptoms?

2. Are we any nearer a standardization of methods of detecting and treating syphilis than before the war?

3. We have mentioned the curability of syphilis. Of what does a true cure consist?

DR. JAMES E. DAVIS, Detroit, Michigan.—Leadership in this work very properly belongs to the United States Public Health Service and in the states to the several local health organizations. To my mind the only efficient way of treating this disease is by internment. When a case is interned it can be properly studied and properly treated, and as has been mentioned, moral teaching so necessary for these cases can be carried out. I think very much better work can be done in regard to the moral treatment. A course of instruction can be given to these girls which will help very materially, with lantern slide illustrations of the gonococci and their effects upon tissues, the spirochete and its effects upon tissue, and an earnest talk with the showing of these slides in Michigan, we have found does a great deal toward securing the coöperation of the patients and toward securing a lasting impression upon them, so that when they go out a certain percentage, at least, are willing to restrain themselves and go where they can have some moral, uplifting environment.

Just a word or two in regard to the treatment. First of all, I differ from Dr. Findley in the percentage involvement of the appendages in these cases. I cannot understand how only 2 per cent. of the appendages are involved. In the series of cases that we studied there were over one-third with their appendages involved.

Again, I believe it is very bad treatment to open the internal os. Here is one of the protecting forces. The sphincter—and we may call it a sphincter—might prevent the infection of the endometrium beyond the cervix in many of these cases and the cervicitis may exist for a long time before you have infection extending beyond the internal os. Therefore, you may in well treated cases prevent some of the end results if you do not enter the canal beyond the internal os.

Another word in regard to moral treatment. If there is any value in religion as a moral uplift, it should be applied to these cases. I think well directed judicious effort is of immense value in reforming these girls.

DR. JOHN W. KEEFE, Providence, Rhode Island.—This problem is so vast that I have great admiration for the men who have been seriously attempting to improve the condition. It would seem to me that we must despair before being able to help in any way.

I have come in contact with some of this work from being a member of a commission that looks after our state prisons, insane hospitals and home for feeble-minded. The fact that such a large percentage of immoral people are feeble-minded is a reason, that at once, will prevent us from educating or improving to any degree, unless we isolate the feeble-minded in the various states, and thus far very little has been done in this country to remedy that defect. Dr. Fernald has been a pioneer in this work, and in Massachusetts he has developed some of the best evidences, that many defectives can be segregated and in that way prevented from reproducing their kind, and also that these people may be made partially self-supporting rather than a drain on the community.

When we speak of passing laws to report venereal diseases, the community feels they have done a wonderful thing, and yet it has been shown here, what a small percentage of the doctors report the cases, even though the laws require it.

A great source in this country of the spread of venereal disease to my mind is not through the prostitute alone. It is true, the prostitute is accused of spreading venereal disease; but the rich man's son is the one who spreads disease, the man who is protected by the money of his father.

I was very glad to hear the remarks of Dr. Davis, because at our meeting a year ago at Pittsburgh, not a single man in discussing this problem said a word about the moral and religious side of it. The great Napoleon at one time concluded that France could get along without religion, but before he died he stated that it was absolutely necessary for France to have some religion. In our own country many of our college professors seem to take great pride in showing a diversity of opinion in regard to religious matters, or belief, and yet today, it holds just as good as it did in the days of the Romans, or the French Monarchy. Unless a boy has some strong, moral religious home training, to keep him straight, he will not remain straight.

DR. ROSS MCPHERSON, New York City.—I wish to refer to only one or two points. In the first place, I want to agree with Dr. Goldspohn, for if I understood Dr. Findley rightly, that he dilates the cervix in cases of acute gonorrhea, I shall have to disagree with Dr. Findley very strongly. I think dilatation of the uterine canal in an acute case of gonorrhea is very poor practice and I should not care to attempt it. I also feel that a great many of the adnexal cases which I see are directly the result of the treatment that the doctor gives and not the gonorrhea. The practitioner who takes an acute case of gonorrhea and begins to stir things up in the uterus and spreads the infection about, is much more likely to bring on tubal disease and endometritis than the woman is to produce it of her own accord if she is let alone. I do not think we should go on record as agreeing with Dr. Findley if he means the acute cases. In the subacute and chronic cases such treatment may be more beneficial.

I think the genito-urinary specialists in treating male patients with gonorrhea at the present time have very largely come to the point where they believe in letting these patients alone, putting them to bed, giving them a certain amount of medication and letting them rest until the acute attack subsides.

DR. H. WELLINGTON YATES, Detroit, Michigan.—I am exceedingly interested in this subject, for with Dr. Davis I have charge of a hospital in which about fifty cases are segregated for this purpose. It has been, at times, very discouraging, yet very interesting at all times, considering the work we have been able to do for these girls, and a part of the good that we have been able to get out of this hospital and out of this particular clinic in the hospital is that we have been able to give them service and at the same time help to educate the medical students which is so valuable and yet so difficult to do in this branch of medicine.

It is a difficult thing to segregate patients of any kind in sufficient numbers so that they may be a teaching asset, but this institution gives us a splendid opportunity.

I want to support what Dr. Davis and Dr. Keefe have said, about the possible good that may come from moral teaching to these patients who are 85 to 90 per cent. below par mentally. They are receptive of good or bad influences as all patients of the child-like types are, and the hospital to which I refer in Detroit is under the auspices of the Salvation Army. I suspect that many of you who have not been associated with such a hospital and with such work may not realize the good that comes from it. Shouting hallelujah on the streets and the swinging of tambourines, is what many persons think as the chief asset of the Salvation Army. If there are those who think the Salvation Army does very little good among this class of people, I want to get that thought out of their minds.

There is what some of the Churches call a working religion, that is, a moral sentiment which goes along with the hospital environment toward the education of these girls, which has indeed a very indirect bearing upon what we see and hear of hallelujahs and tambourines, although the latter may, however, have some good in it to this end, since as we have said, we are dealing with the child mind in at least 85 per cent. of these individuals. We are strongly of the opinion that this religious teaching has been a wholesome influence at least upon the conduct of these girls while in the hospital.

So far as we are concerned, we do find that some of these patients, a considerable number of them, are definitely influenced for good, and I believe permanently. A great percentage of them are influenced for the better, and even while they are in the hospital they are more receptive to treatment. They are more willing to stay there. Of course, we have our ups and downs about their leaving the hospital. We find some mornings that four or six or more may have disappeared. We have had two jump out of windows, one broke her back, and recently one of them got out at night, and the next day she held up a man in our town, shot him, and took away his money.

With reference to the question of treatment, I want to substantiate what Dr. McPherson has said. I am strongly inclined to believe that we should leave the acute cases of gonorrhea very quiet, and we should only give these patients such treatment as is palliative and cleanly.

I want to speak of another thing which has not been mentioned, that is, in relation to the treatment of Bartholin's glands and ducts. There has been a common sentiment expressed this morning that the cervix is the last to be involved. This may often be true but in our experience we have learned that Bartholin's glands hold this infection longer than anywhere else. We have frequently found that clinical evidence of disease was wanting in all the other areas of common infection, together with the fact that five negative smears had been made, yet we could find unmistakable evidence of chronic disease still obtaining in Bartholin's glands, the duct meatii of which are sealed and the enlarged glands give clear evidence of infection.

On opening these glands they show evidence of a subacute process, thus making it necessary that in such instances as we have these large glands to deal with they should have such treatment as local application may indicate together with massage or perhaps their removal in entirety.

Dr. John D. Miller, Cincinnati, Ohio.—The subject is to a great degree a sociological question. How are these girls going to make their living? They are under par and the state or the city puts them out, and they are not able to earn enough to keep them sufficiently clothed, and they go back to the same occupation. It seems to me to be an endless chain.

Recently they took away from the Gynecological Service of the City Hospital the best ward we had there and have now converted it into a ward for the treatment of venereal diseases. We have a ward for women which will accommodate fifty-three or fifty-four patients. That ward is constantly filled. Some of the women have come back three times for treatment since the ward has been opened, so that it is certainly a very difficult proposition to know exactly how to handle these cases. The acute cases we treat usually symptomatically. We do not apply any specific treatment to the cervix or to the uterus. We treat these cases very much after the plan Dr. Goldsphon mentioned, that is, the cervix has a plug of mucus which protects the inside of the uterus, and we leave the cervix severely alone.

The great majority of cases that come back are not reinfections as shown by tests. They are what we might term cases of reawakening. The tests we make are either positive or negative, and three negative tests will allow a girl to go out. Shortly after some of them leave there is a relighting up of their condition and they are returned for another course of treatment. In the chronic cases we dilate the uterus and thoroughly curet, and if the tubes are diseased we do not hesitate to do a laparotomy.

Dr. George F. Chandler, Kingston, New York.—During the last few years I have had an unusual opportunity to study the venereal disease problem. I organized the state police of New York State and we have had a lot of work to do with the military authorities and with the local authorities in this matter.

As a moral question I agree with Dr. Carstens, that you cannot do anything with it. After considerable study I discovered that in the rural districts around the small cities, there were what we call road houses in which were a lot of prostitutes. They make these places their homes and they also use country boarding houses. They tie themselves up with the taxicab drivers in the city and after some study I was appalled at the situation that obtained in these rural districts. I do not think those who practice in cities know anything about it. The State Police investigated these places. We found that men motoring through the state would stop at these road houses. We obtained our information from good citizens and we would then have a man in uniform call at these houses and talk to the proprietors asking what kind of houses they were running. They sometimes got angry about it but we did not care. The fact that the State Police were watching certain places spread like wildfire around the country and all patronage promptly ceased. We kept up the agitation to such good effect that Major Wright of the Department of Justice stated in his last report that New York State is about as clean, if not the cleanest state in the Union. We certainly have done a lot of good work in that way. We drove women into the cities, that is true, but if you can have the local authorities back you up, you can drive them out of the cities and into the rural districts again, thus diminishing their opportunity, and we will lessen venereal disease in this way. I believe that a State Police force that is not politically appointed, that will go right straight into the rural districts, can be one of the most effective means of lessening, if not doing away with venereal diseases. I look upon it as purely a police problem.

Dr. Hugo O. Pantzer, Indianapolis, Indiana.—With syphilis and tuberculosis we have lately attained a fuller concept of the great and ulterior effects of bacteremic diseases; but as yet, how little is developed the clinical appreciation of the parallel effects prevailing by other bacteremic infections! We have for a long time observed that such diseases as typhoid fever, scarlatina, etc., leave a notable per cent. of their victims permanently weakened, but how hazy has been our concept of wherein lies this weakness and how inadequate our remedies to combat it! And moreover, how little as yet is unfolded to us of the formidable menace latent in these weakened individuals as "carriers" of specific disease germs!

Another thought I wish to express is in continuity with the remarks made by Dr. Keefe. If we could take from the spirit and practice of our religion and law their vindictiveness, if we might accept for our guidance the words of the crucified Christ, "O Father, forgive them for they know not what they do," we would then logically abhor and abolish all thoughts of penalty and penal institutions. We would instead have created "courts of sympathy" and "homes of benevolence" for these unfortunates, who must be restricted in their liberties because of their inherent evil tendencies. This spirit and such measures would make for the betterment of mankind and then even more for the betterment of those outside than those within these institutions.

Dr. John Norval Bell, Detroit, Michigan.—There is one suggestion I would like to make. If the Marine Hospital Service would publish a circular of some kind, with illustrations of a huge ulcer of the penis or vulva, and a brief statement to the effect that if you neglect scientific treatment, this is the condition that may result, it would accomplish much. There is nothing so convincing as a good picture. This circular could be printed, distributed to the men who are in charge of the Public Health Service in each community and it should be their duty to see that every doctor in that community is supplied with a certain number, so that, being the men who originally see and treat these patients, can give them the little circular, they can read it, and it will help to educate future patients.

Dr. Miles F. Porter, Fort Wayne, Indiana.—It seems to me that the most important aspect of this question, is that which pertains not to the individual case but to the public, and that point which has impressed itself most forcibly upon my mind is this: we have a machine in our detention hospitals, etc., which works first ra under central authority but fails when the central authority quits functioning, all of which means that if we are ever to get anywhere along the line of public health development, we have got to make up our minds that it must be a machine the head of which is in Washington, a federal institution, and it appears to me now would be a good time to place this Association on record as being in favor of a federal health administration. Then we can begin to do some good. We won't have to wait for another war before we can successfully run our detention camps for the treatment of venereal diseases.

Dr. Douglas C. Moriarta, Saratoga Springs, New York.—I would like to ask how efficient the treatment is and whether curetment was done in the chronic cases.

It seems to me, the mere fact that these smears were made and these women were allowed to come back, is not enough. What constitutes efficiency treatment? I would like to be told.

Dr. Palmer Findley, Omaha, Nebraska (closing on his part).—With reference to the remarks made by Dr. Carstens, I do not share in his rather gloomy outlook of the problem. When I first went into the work, for the first month I was discouraged because we did not seem to be getting anywhere. As the days went by my confidence was more and more inspired and near the end of the service I must say with some fear of being regarded as overenthusiastic, that I had the utmost confidence in the cleaning up of these cases, provided the infection was confined to the uterus and urethra. Not only did I believe we could clean them up, but I would almost schedule the time when we would get results. We had these women under conditions that we do not have in private practice.

In regard to the acute cases of gonorrhea, Dr. McPherson misunderstood me in reference to the management of such cases. I am just as much aware as any of you that in an acute inflammation, rest, time and cleanliness are all there is to it, and I do not for one moment recommend injections or swabs or anything else in such cases. However, we had very few cases, not more than half a dozen of the whole three hundred or more. These cases were put to bed, given douches and large quantities of drinking water to wash out the urethra. We did not give vigorous treatment to the sub-acute cases. Most of our cases were chronic and long standing.

We have heard Dr. Goldspohn and one other gentleman who discussed the paper say something about the internal os as a barrier to the onward spread of infection. If we go back to our anatomy we find, after all, that there is no real anatomical barrier at the internal os. You remember the cervix is lined with a cylindrical type of columnar epithelium, with an elongated nucleus at the base of the cell. We have glands in the cervix with the same type of epithelium. These glands branch widely and we have in the body of the uterus tubular glands secreting a thin mucus. The individual epithelial cells are low and broad and have a round nucleus in their center. At the internal os we have a shading off of these anatomical conditions. Hence there is no anatomical barrier against the upward spread of infection at the internal os.

I do not know what produced the results, but after we resorted to the gas machine and dilated the cervix and swabbed out the uterus with formalin and iodin, these cases that had resisted treatment for weeks and even two or three months responded like magic to treatment. Whether the gonococcus was confined to the cervix or the body of the uterus I do not know, but I know that I got results.

As to the moral uplift work, I took this up at the beginning with a great deal of enthusiasm. I asked the Y. W. C. A. to appoint an experienced worker for the home. We have a splendid woman experienced in welfare work to look after our inmates, and while I would not for one moment detract from such work, I believe from my own experience it was discouraging in every single instance. The girls as a rule were as responsive as could be while they were in the hospital or home, but when they got out they returned to their old ways. We did follow-up work; we had religious exercises; we had health talks. Dr. McLaughlin gave a splendid talk one afternoon. We had daily family prayers lead by the matron, and, while the girls were not compelled to attend them, most of them did. I think our most interesting case in point was that of a trained nurse. She was bright, she was not only a trained nurse but a correspondent for one of the papers or had been. She made a number of public addresses in churches and elsewhere on the work of the Detention Home to combat the propaganda carried on against it. We had great hopes for that girl, but when she left the home she was not content with living with one colored man but lived with two.

You must remember that most of these girls have a low grade of mentality and there is not much material to work on.

Dr. H. F. White, Washington, D. C. (closing on his part.)—I have listened very attentively to the discussions and have been very much interested in them. The one thing that impresses me more than anything else has been the pessimism displayed.

I have been in the fight from the beginning until the present time. I started a part of it in southern cities and in one southern city I fought very hard. I saw defeat there at one time but managed to bring success instead.

I am going to confine my remarks to the value of detention homes in the control of venereal disease. We must have a place to put these infectious cases. The state should provide an institution for the feeble-minded. Every women arrested on charges involving immorality, disorderly conduct, etc., should first be given a physical examination; second, but most important, a mental examination; and if it is found that she is feeble-minded she should be sent to that institution. It is obvious she cannot measure up to the standards of society. The degree of her mentality is such that she should either be permanently segregated or segregated until such time that she can take her place in society decently. That should apply not only to women but to men. In that way, and only in that way will we ever be able to break the vicious circle that is existing to-day.

Relative to the syphilitic, we can only determine a syphilitic by the serological test and the clinical history of the case. I believe we have to depend on them. I can say positively that advanced work is being done now on the Wassermann and new serological tests are being made or are being developed. Verne, in France, is working diligently on it and he believes that he will not be able to say that a person is syphilitic, but can state the degree of the infection. He claims that if he can get a negative Wassermann of the blood and of the spinal fluid, and it will remain negative eight months after repeated examinations, that patient is well; and if in three or four years, should a patient return and the serological test prove to be positive, he would be rather doubtful relative to the return of the original case and would be inclined to believe that it was a reinfection.

Relative to hereditary syphilis, we feel optimistic as to the results. We believe that treatment, a vigorous educational and a law enforcement campaign, with detention and psychological studies, will cut down the amount of hereditary syphilis.

From a national viewpoint, and judging from the program we have inaugurated and are trying to develop through the State Boards of Health, we feel satisfied that legislation is a good background. It is at least comfortable to know that you will have the necessary legislation on which you can depend in case of necessity.

Next to the legislative program, which includes the reporting of diseases and the elimination of prostitution, we consider medical centers of next importance; centers through which the social worker can accomplish a great deal, and a general educational campaign through pamphlets, posters, and lectures can be distributed. Next to that we consider our educational campaign. Although possibly limited, we think it has done some good and we hope in the future to get our literature on higher planes; to get away from the war time psychology and get it down to a peace time way of thinking, and give you more suitable and concrete data, and that the educational campaign in the future will be of more benefit than it has been in the past.

We hope to develop other phases but I believe the way we are working with the organization now that spreads to forty-eight states, this campaign against venereal diseases will be a success. We are big enough to believe that we are only beginning something that will eventually be a success. The more we get into it the more momentum we gather, regardless of who shall help us and who shall drop out, the more successful such a campaign will become.

Dr. A. J. McLaughlin (closing on his part).—As Dr. White has stated, we who are working in venereal disease control look forward to universal success, to universal good, and not a community affair. We certainly would have been discouraged long ago if we were looking to any special community for success. We feel that our success is gradually gathering considerable momentum, and we are doing some good all the time and are growing. That is the idea of the Public Health Service and of the men who are working in venereal disease control.

Dr. Keefe spoke about failure in reporting the case of the rich lady. If I was a laywer, a criminal lawyer, and a man came into my office and turned his case over to me for murder, and he said to me as a lawyer that he had committed this murder, and asked me to defend him, I would not call up the authorities and tell them that he had confessed to me. I do not think lawyers do that, and the Public Health Service do not expect doctors to report cases where it is going to expose the patients at all even by number. However, I cannot see any reason for not reporting the case of the rich lady by number and name if she is spreading infection just as we would report the case of the poor woman.

We all appreciate the fact that religion and moral training, as a matter of fact, with the oncoming generation will have a great effect upon venereal diseases and it is having a great effect at this time. But did you ever stop to think that the high school boy with venereal disease who consults a doctor which goes on to an epididymitis or orchitis will say to the doctor, "If I had known what this infection meant, I would not be here to-day, and I will never be here again." That is where education is doing good. I talked for about six or eight months to draft men on this subject and conversed with many of them afterward and know that education does a lot of good.

One of the speakers referred to ringing up the curtain. You will never accomplish anything in venereal disease control until you ring up the curtain and keep it up. You have got to educate civilians and the public before you can do any good with venereal disease. How many young growing up people in this country today know anything about the after-effects of syphilis? I wonder if they know anything about the deaths; I wonder if they know anything about locomotor ataxia, and that sort of thing. That is the reason you have so much locomotor ataxia and latent syphilis because patients do not receive sufficient treatment and are uneducated. Recurrences take place because of insufficient treatment.

Did you ever stop to think that a woman who comes back to the office of the gynecologist complaining of a recurrence of gonorrhea is having sexual intercourse with the same man who infected her in the first place, and is reinfecting her? You can take 50 per cent. of the recurrences and you will find they are reinfected primarily and secondarily through the same sources. If you call in the husband and use the three glass test on him you will find that he infected his wife, and is reinfecting her.

Dr. W. F. Draper, Washington, D. C. (closing the discussion).—Dr. White and Dr. McLaughlin have very thoroughly covered my views on the subject, Dr. White especially.

I have been very much interested to hear the question of the moral and religious effect in connection with the treatment of venereal diseases raised. I rather hesitated to say anything very much about that in my paper, because I have not been accustomed to to hear doctors talk very much about moral and religious affairs. However, I do believe that the moral and religious side of this question is an extremely important one, and that its ultimate solution will not be reached until we apply to the very fullest the moral and religious side. We all know that what a person really believes honestly and particularly believes within himself is the most powerful influence he can have. You may know that in cases of psychanalysis we take people with neurasthenia, with obsessions and curious mental conditions and find out what these beliefs are due to. Then we really supplant in their minds something else to take its place, and usually what we will put there is philosophy contained in the Bible, or the practical application of the principles in the Bible. People who have sufficient mentality to grasp any phase of religion, if they can be used to supplant their wrong doing, it will have a decided effect.

Prostitutes can perhaps be divided into two classes, those who are really feeble-minded and below par, and so far as they are concerned you cannot do anything with them except to direct, isolate and segregate them, and those who can learn something else and can be removed from the past which they had trodden before. I do not see any sense in taking a feeble-minded individual and curing her and turning her back into the community again when we know well that individual is not capable of doing anything different from what she did before. In fact, I know we can never control venereal disease as long as we do that, and I think very likely the reason why venereal disease has not been controlled and nearly eliminated is because we have not done that.

Psychological tests are one of the keynotes to be considered. We must put the mentally inferior person who cannot be educated and rehabilitated into some kind of institution and keep him there for life, otherwise we will have venereal disease spread and continue to do so. This will entail a tremendous cost on the community and be a terrible drain, and so on, but it is simply a question of whether it is better to have venereal disease than to spend money and do away with a good deal of venereal disease.

As I stated in my paper, patients ought to be kept in detention from one to four years. I say that as a result of experience. The patients whom we had in our hospital from one to five months went out absolutely embittered. They did not care about the fact that they had disease and had no intention of doing anything else. The doctors talked to them. I talked to them, but what we said had absolutely no effect upon them and one might as well talk to the wind. It did not have any effect, and one of our nurses, a most estimable one, a woman of force and influence, talked to them but what she said had no effect at all. Our social workers had no effect or influence with this class of people, not as much as the rest of us from my own observation. So these women went out absolutely bitter and protested against the whole thing. If we can keep them there long enough and do the right kind of thing for this particular class of people, so that we can accomplish something, great good will be done. Because I talk to a patient and cannot accomplish anything, it does not mean that the Salvation Army cannot do it. The Salvation Army does not appeal to me in its methods of teaching, but it does appeal to another class of society, and it can do what no one else or nothing else can. The Salvation Army and other influences of that kind very likely can teach good to these people and get a response which nothing else can do, and it is worth while keeping these people long enough to try these things out thoroughly so that we will know what we are doing.

In a Symposium on

THE ADMINISTRATION OF ANESTHESIA IN OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY, the following papers were read:

By JOHN J. BUETTNER, M. D., Syracuse, N. Y.

SAFETY FACTORS IN THE TEAM WORK OF OPERATOR AND ANESTHETIST.

(For original article see page 646.)

By R. E. FARR, M. D., Minneapolis, Minn.

SOME ADJUNCTS WHICH PROMOTE EFFICIENCY IN LOCAL AND REGIONAL ANESTHESIA FOR MAJOR SURGERY, illustrated by lantern slides and moving pictures.

(For original article see page 653.)

By CHARLES W. MOOTS, M. D., and E. I. MCKESSON, M. D., Toledo, Ohio.

"SURGICAL BARRAGE."

(For original article see page 661.)

By C. E. TURNER, M. D., Columbus, Ohio.

MOVING PICTURE ILLUSTRATION OF DELIVERY UNDER NITROUS OXIDE ANESTHESIA.

(For original article see page 670.)

By BERTHA VAN HOOSEN, M. D., Chicago.

POSTOPERATIVE ANALGESIA.

(For original article see page 677.)

DISCUSSION.

DR. GORDON K. DICKINSON, Jersey City, New Jersey.—With reference to shock, there was a time when I felt that the anesthesia was 50 per cent. guilty in our postoperative complications, but I have come to the conclusion that the guilty man is the operator. Most surgeons can look back over their work and wonder why it is that 10 or 15 or more per cent. of their patients were shocked. We seldom see shock in our institution, I do not remember having come across a case of shock once a year. A patient can get shock from a dilated stomach.

Two years ago I read a paper on "Pseudoileus," and since then I have had hardly a case. There has been going on an evolution which is the result of careful selection of cases and of good psychology and preparation. I do not think anesthesia has much to do with it and if you are going to blame the anesthetist you will not gain in your fight against shock. A patient should be in the hospital at least forty-eight hours before operation; there should be a smile and a cordial greeting given to such patients. The personality of the doctor and of the nurse, in fact of everybody is a factor to be considered in connection with shock. I agree with Crile that if we can eliminate the psychic element the other factors are only of minor importance.

I saw on the screen the frequent wiping of gauze on the wound. I do not like it. I like far better generalized firm compression with a pack wrung out of water at say a temperature of 120°F., with gentle traction so as not to inflict traumatism. Traumatism to the gut in pulling out the gauze is a bad thing. It develops a type of shock.

Dr. R. E. Farr, Minneapolis, Minnesota (closing the discussion on his part).—The papers are allied and still so diversified that it is difficult to discuss all of them.

The question of scopolamin-morphin has been brought up, and I believe that if we follow the scheme that Dr. Van Hoosen has outlined, but use local anesthesia instead of giving chloroform or ether, these patients will get along much better. A preliminary narcotic in these cases may be a good thing. I have seen so many unfavorable reports regarding the use of scopolamin-morphin that I am somewhat afraid of it and have used it sparingly of late. However, I think scopolamin-morphin has its place in our surgical work.

I have been using a little novocain at the end of the operation, repeating the injection which gives me about two hours additional anesthesia, and many of these patients go on for several hours with great comfort.

One of the essayists brought out the point of the anesthetist examining the patient. As I stated, if we have an anesthetist who can do these things, well and good. However, I prefer to examine my own patients; I find out everything I can about them and would not leave it to the anesthetist. I want to know everything I possibly can about the patient; I am responsible, and the thing that first induced me to use local anesthesia was because I could give it myself. That statement may smack a little of the *ego*, but when I give the anesthetic I depend on no one else. There are some advantages from that standpoint.

The question of time is important only in general anesthesia. In local anesthesia it is not so important. It makes little difference whether you take thirty minutes or seventy minutes under local anesthesia to do an operation. You must get through before the anesthetic is absorbed and its effect has gone. When a patient undergoes an operation under general anesthesia, the reason the length of time is proportionate to the degree of shock is because the patient takes more general anesthesia, and not because you take a longer time in tying a knot or in making your incision.

As to the condition of patients at the end of operation, we have seen the pulse curve and blood pressure curve remain unchanged. I have not my statistics at hand, but we have made these over and over again with patients who have undergone gastrectomy, hysterectomy and other major operations, and aside from cancer cases and operations that have a lot of trauma connected with them, we can send the patients back to bed with a pulse under eighty. We have had several cases return home after an operation with a pulse never above eighty from the time they entered the hospital until they left. We have done and do not hesitate to perform the largest operations under local anesthesia.

The condition of the skin, the color, the pulse, blood pressure and respiration do not change with a perfect local anesthesia, in an operation without trauma.

As to gas pains, I believe postoperative gas pains are directly proportionate to the amount of trauma done to the intestines. Gas pains, eliminating infection, are in almost one hundred per cent. of the cases due to rough handling of the tissues. We do have occasionally a case of hernia where you open the abdomen and the air seems to cause an effect where you do not touch the intestines at all, but other things being equal, gas pains, postoperative temporary ileus, are proportionate to the trauma from the packing in of gauze. I saw in this city, two large rolls of gauze put into the abdomen in a case of salpingitis. The patient came near dying. As soon as the surgeon removed one large piece of gauze there was a letup in the danger symptoms and the patient responded nicely.

Dr. Charles W. Moots, Toledo, Ohio (closing the discussion on his part).—Just a word with reference to the use of scopolamin and morphin. I reported three years ago that this was a part of our regular routine preoperatively and postoperatively. The fact that we have had no bad results, is largely due to the selection of a carefully made preparation of scopolamin. We do not give it to old people. I scarcely ever give it to a patient above fifty years of age.

When a patient is put back to bed one or two pillows are placed under her head and one or two pillows under her knees to shorten the distance from the symphysis pubis to the ensiform cartilage. This to my mind is the biggest factor in relieving pain in abdominal cases.

The instrument makers have not grasped the idea that it is not necessary to have the feet drop in the Trendelenburg position. The Trendelenburg position is a good thing if you do not drop the feet. In dropping the feet you increase the distance from the ensiform cartilage to the symphysis pubis and render the rectii muscles much more rigid and the pelvis much more difficult to approach.

Dr. Bertha Van Hoosen, Chicago, Illinois (closing).—I would like to say a word in reply to a statement made by Dr. Farr that there was something dangerous about scopolamin-morphin.

I wish to give briefly the experience we have had at the Cook County Hospital. At this hospital we use any preparation that the county can get cheap and sometimes it is one preparation and sometimes another. The scopolamin-morphin is put up in solution in the drug room. We give 1/100 gr. of scopolamin and 1/6 gr. of morphin, repeat in an hour, and operate within the next half hour. It is given to patients of all ages. There has been no exception made in the six years I have been connected with that institution. I do not recall a time when we did not have five or six major operations a week, and sometimes up to ten. A nurse gives additional chloroform if necessary. We give one-half chloroform and one-half alcohol. The fumes of the alcohol are stimulating, but most of all it dilutes the chloroform mixture. The nurse is warned never to let the patient's reflexes disappear under any circumstances. If the patient moves she gives chloroform on the mask without any reenforcing with gauze or towels. In all these six years we have never had an occasion to resort to measures for resuscitation; we have never given a dose of strychnia or anything to the patient while on the table. During that time, we have not had a death from it, yet now and then, not once a year, but oftener, a patient will die on the table from ether anesthesia, the safest anesthetic there is.

I want to say a word or two with reference to nitrous oxid analgesia. I think the great relief it gives women during the second stage of labor is wonderful; but my impression is that pain during the second stage is fairly bearable, but that the pain during the first stage is more wearing and ought to be relieved. No one would think of giving gas for hours while the cervix is slowly dilating. Scopolamin-morphin is the only anesthetic that will help out the first stage and all you need to do for the second stage is to continue the injections. The doctor spoke about giving ether when you use forceps. I have never delivered a woman with forceps under gas anesthesia but I have delivered with forceps many times under scopolamin-morphin anesthesia, and it is the most lady-like job I have ever done. If you apply the forceps without giving the patient any chloroform or ether you simply add your strength to that of the uterine contraction, and it is so easy that you will not be out of breath or change color. When I began I did not know it was so easy to deliver with forceps under scopolamin-morphin, but finally learned it was because I was doing such a small part of the work. I believe it would be the same with gas, that the uterus would work under gas oxygen anesthesia and the doctor would be able to apply forceps much more easily. After having delivered women many times with scopolamin-morphin anesthesia, it happened one day that a patient was brought to the hospital unconscious, in coma, and the baby dead. The woman was taken to the operating room, I put on high forceps, and nobody could understand why I worked so hard to deliver her. I was doing all the work myself.

Dr. Farr.—May I ask you a question? My experience leads me to think that scopolamin-morphin and pain combined frequently results in the patient becoming obstreperous. I have found when using scopolamin-morphin that I had much more difficulty in controlling my patients when I did not have good local anesthesia along with it, and that once in a while some patients would act as if intoxicated. Have you had that experience?

DR. VAN HOOSEN.—Once in a while these patients get excitable, but we find some patients who are just as excitable under ether. I think it makes a great deal of difference how we give scopolamin-morphin. If we give scopolamin-morphin in the doses I have mentioned, we have very little excitement on part of the patient unless the patient is in the habit of taking morphin or alcohol. At the Mary Thompson Hospital we make every attempt to individualize in giving the last dose and in that way control the excitability. We give 1/100 gr. of scopolamin and 1/4 gr. of morphin in two doses an hour apart to patients ranging in age from fifteen to fifty-five. To patients of seventy or more we give 1/100 gr. of scopolamin and 1/8 gr. of morphin an hour apart. The patient is taken to the operating room and if she is excitable, we do not give any more scopolamin, but may repeat the same dose of morphin that was given in the first doses and that does away with the excitability. If instead of the patient being excitable her face is pale and her respiration drops to ten or below, then we may repeat the scopolamin but give no more morphin and this brings the respiration back to normal.

DR. ASA B. DAVIS, of New York, read a paper on

THE PROPHYLAXIS OF GESTATION.

(For original article see page 682.)

DR. SYLVESTER J. GOODMAN, of Columbus, Ohio, read a paper on

PRENATAL CARE.

(For original article see page 689.)

DR. ROSS MCPHERSON, of New York, read a paper entitled

THE CARE OF THE BOWELS DURING THE PUERPERAL PERIOD.

(For original article see page 698.)

DISCUSSION.

DR. IRVING W. POTTER, Buffalo, New York.—I think we all agree with Dr. Davis pretty thoroughly. There are some points in connection with Dr. Goodman's paper that are very interesting and what he said in regard to the vomiting of pregnancy we all know to be true. There is one point that has come to my attention which is so simple that I presume you will all laugh when I state it, but in the case of a pregnant woman who is vomiting, has been vomiting, or expects to vomit, if you will urge her to chew gum and tell her to continue chewing it, she will get great relief. It aids the secretions all along the intestinal canal and overcomes the various conditions that annoy her.

I am not so sure that Dr. Goodman is absolutely correct in his statement about blood pressure. What he says, of course, is true about the one who interprets the readings, but when a woman starts out with a blood pressure of 120 and it jumps to 150 or 200, something is wrong.

I have been interested in Dr. McPherson's views for the last two or three years. I have followed him very carefully and I think probably he is right. I have been a great advocate of castor oil. The usual dose of castor oil with me is 2 ounces on the second day. There is no homeopathy about that and it generally works, and nobody seems to object to it except the nurse. I am rather inclined to believe that I shall try out the saline idea because I think it is going to save work in the hospital. Possibly it may relieve some patients, but I have always advocated a good generous dose of castor oil, and I use 2 ounces rather than half an ounce because we usually get a more rapid action from such a dose.

Dr. Arthur J. Skeel, Cleveland, Ohio.—With regard to Dr. McPherson's paper, our routine has always been to give an initial cathartic about forty-eight hours postpartum, and after that the patient has been handled with enemas rather than with drugs, not because I have any particular notion it is better for the patient or affects her temperature in any way, but because I think the use of cathartics does diminish the milk supply; and because I felt sometimes cathartics were physicking the baby rather than the mother.

With regard to Dr. Goodman's point on blood pressure, if he means by his statement merely that a rise in blood pressure is not pathognomonic of eclampsia, he is right. In the first place, we cannot define eclampsia; consequently we have no pathognomonic sign of it. Of course, any symptom must be interpreted by a competent man, and I agree with the last speaker, if a woman has a normal blood pressure at the beginning of pregnancy, and that blood pressure goes up markedly in the later months of pregnancy, the fact must be noted. It is true some cases of eclampsia occur without a previous rise of blood pressure, as some occur without previous albuminuria, but that does not alter the fact that if we have albuminuria and a rise in blood pressure immediate attention is necessary.

Dr. Arthur H. Bill, Cleveland, Ohio.—There are one or two points upon which I might comment. In the first place, I have been surprised at the small number of cases of really severe vomiting of pregnancy. I meet with very few cases of what we call pernicious vomiting of pregnancy in my own practice. While I agree with the writers that there is no specific treatment for the vomiting of pregnancy, I believe that there is a large psychic element to be considered. The average pregnant woman, especially if a primipara, is filled with fear and anxiety over her condition. She is worried about what she hears of other women's stories concerning the ordeal of labor and of the complications which may arise. She is nervous over her condition. Assuring the patient after a thorough examination that she is normal, allaying her fears, and gaining her confidence does much toward preventing complications of this sort.

In regard to the blood pressure, I cannot agree with Dr. Goodman, I have come to look upon the blood pressure as one of the best indications of toxemia of pregnancy. Recently I saw a group of cases in which upon repeated examination nothing abnormal could be found in the urine, and still there was an increasing rise in blood pressure in women who had previously had normal blood pressures. I look upon these cases as instances of toxemia and have treated them as such. If such cases are allowed to go on untreated they will eventually, in some instances, become cases of eclampsia. I believe that of all the indications which we have of toxemia, blood pressure is the most valuable and I would trust it more than I would a urinalysis.

Dr. McPherson had told me previously of his practice of treating patients during the puerperium. I have gone through the wards in the New York Lying-In Hospital with him and looked over the temperature charts, have asked the patients how they felt, and I can agree with him that they showed no bad symptoms from lack of catharsis. One of the most disagreeable things to a patient during convalescence is the use of the bed pan. Patients who have been previously perfectly well, who have not been accustomed to be in bed, find this a real difficulty, and especially so if severe cathartics have been given. I have always used routine cathartics and have given liberal doses, not as liberal as Dr. Potter, but liberal doses of castor oil, but I am inclined to think that we would get along just as well, and with greater comfort to the patient, with less trouble for the nurses, and with less disturbance in the hospital in general, especially in the wards, if this plan were followed.

Altogether I am inclined to agree with what Dr. McPherson has said.

Dr. H. Wellington Yates, Detroit, Michigan.—I desire to emphasize again the point made during the discussion in the matter of blood pressure. I think that is an important phase of this subject. The question of whether a woman has a moderate degree of albuminuria or not is to my mind a very minor feature, but as to whether she has an increasing amount of blood pressure is an important matter. The blood pressure, as the last speaker has said, has been a better guiding star as to the pre-eclamptic period than the urinary examination.

Just before coming to this meeting I had a patient with marked swelling, many psychic symptoms, and a moderate amount of albumen in the urine, that before we studied the question of blood pressure it would have given us a definite idea that she was going to have an eclamptic seizure, but with a former study of her blood pressure, I felt perfectly comfortable about this woman's condition. Her blood pressure was normal all the time; the swelling was extreme; the albumen was very moderate; no eye symptoms; the labia were swollen more than any case that has come under my observation—

much larger than my two fists, only permitting an examination with one finger, yet that woman's blood pressure was perfectly normal, that is, 130. She was thirty-two years of age, and I am only speaking of this to give emphasis to what the other three gentlemen have said that the question of blood pressure is extremely important in this condition.

I would like to say something about the care of the nipples. Some fellow of this Society read a timely paper on this subject two years ago. He referred to the prophylactic care of the nipples by the use of sterile oils or cold cream and massage, and depreciated the effect that alum, alcohol and other hardening agents would have. I merely refer to his paper to emphasize the importance of this subject.

Dr. Edward A. Weiss, Pittsburgh, Pennsylvania.—With reference to the occurrence of nausea and vomiting in pregnancy, the thought suggested by Dr. Bill recalls an investigation made a short time ago in a maternity hospital in which there were practically all illegitimate cases. In analysing the histories of patients to ascertain different facts, we also inquired as to the history of vomiting. We found that in 800 cases there was vomiting to a greater or less degree in only 47. We then analyzed 100 cases of our own (private cases), and we found that there were 37, which would indicate that possibly the psychic factor is a large element in the production of vomiting of pregnancy. That is especially true if we remember that the illegitimate cases as a rule have poor hygienic surroundings, and whose general conditions were often bad. In such cases we would expect more toxemia than in those under prenatal care and who were given all the attention required. While it is true that pernicious vomiting of pregnancy does occur in a certain number of cases, nevertheless it is our belief that it is not as common an occurrence as we have been led to believe in the past.

Dr. Hugo O. Pantzer, Indianapolis, Ind.—The routine treatment advocated by Dr. McPherson meets admirably the average indications, but, possibly, is too little observant of the special conditions pertaining to the individual case. It seems to me we have reason to seek the fundamental causes of the disturbances attending gestation and the puerperium. My thesis for graduation in medicine written thirty-eight years ago, was on puerperal eclampsia. It served to keep me greatly interested in this subject ever since. During this time the efforts of investigators to connect the occurrence of eclampsia with specific outgrowths from the pregnant state have produced various theories, none of which has maintained itself. On the other hand striking observations connecting the disturbances of pregnancy with collateral disease processes have found emphatic expression. Thus, the association of dental disease with pregnancy has found its apt expression in the popular German adage, "A tooth for every child." This, scientifically interpreted, means that when the maternal organism is afflicted with dental disease, the superadded burden of elimination by the toxins of pregnancy, decreases the organic resistance and hereby the disease upon the teeth progresses more destructively. This view connecting eclampsia with toxemia of all kinds is founded on the deteriorating influence that toxemias have upon all glandular organs and accords with the various pathologic findings after fatal cases of eclampsia. Disease changes in the kidneys, liver, pancreas, and the whole list of glandular organs have been reported in such cases. This view necessitates that, in addition to the measures advocated to relieve glandular stangation and systemic poisoning, we shall search for and treat most energetically *all* foci of infection and toxemia.

One word more about the efficiency of rest. Rest in all infectious diseases effects at least a temporary good, but it does not assuredly lead to the extinction of intrenched infectious microbes. Without such extinction, the effects of the physical strain during child-birth may cause new waves of bacteremia to appear, and set up conflagration giving us puerperal fever.

DR. LOUIS BURCKHARDT, Indianapolis, Ind.—I fully agree with DR. McPherson and consider his practice wise. Within twenty-four to forty-eight hours after a normal confinement I have all my patients get up on the commode. I have them move around in bed, as there is no reason why we should keep them lying on the back. Mild Cathartics or enemas will do the rest.

Whenever we have a case of miscarriage to deal with, we at once ought to consider the outlook for the next pregnancy. Just now are we conducting investigations from that point of view. Eliminate syphilis as the cause of abortion, eliminate infections like gonorrhea, you cannot find any cause. To make blood transfusions, when we have laboratories and hospitals to do the work properly, we make compatibility tests between the donor and recipient. Why then not make compatibility tests between the donor and recipient in married life. The question opens up a wide subject. The fact is we have found a surprisingly high percentage of cases of incompatibility where we have had repeated miscarriages for which we could not account after all possible and careful examinations had been made. It means, of course, that we made Wassermann's not only once but repeatedly. We take a careful history of the cases, and we rule out vomiting as a cause of miscarriage, and then study the family relationship between husband and wife.

In animal husbandry you know very well if you take an old mare that has never been foaled she will be very resistent to impregnation. We find in human husbandry the old maid who for years is resistent to impregnation. That leads us to the next point. There is a reduced facility of impregnation. Should there not be retarded compatibility. That means young people will quickly conceive, while old ones will take a longer time until physiological compatibility has been established.

DR. JAMES E. DAVIS, Detroit, Michigan.—Just a word or two concerning the pathology of catharsis. After a vigorous cathartic has been given, there is produced a hyperemia in the bowel with petechial hemorrhages and ultimate increased activity of the epithelium in its absorptive function. If Dr. Potter could examine the intestinal tract two or three days after giving 2 ounces of castor oil he would find the entire tract studded with punctate or petechial hemorrhages at intervals of about a centimeter apart.

Another feature about active catharsis is that we increase the number of colon bacilli that are deposited about the anal region. We bring to that region colon bacilli that are most virile, those that have been cultured in the upper intestinal tract. This makes it easy to have a cystitis from the colon bacillus.

Last week I had occasion to study diagnostically a case manifesting a high temperature without any definite clinical reasons. After careful examination we found a colon bacillus infection in the bladder. The case showed repeated temperature readings day after day, 102° to 104° F. Daily examination of the urine demonstrated pure cultures of colon bacilli. After stopping catharsis, which this patient had been subjected to for eight or ten days, the temperature subsided entirely without any medication whatsoever other than irrigation of the bladder with 0.5 to 1 per cent. silver nitrate solution.

Dr. James F. Baldwin, Columbus, Ohio.—There is one point I would like to speak of in connection with Dr. Davis' paper, and that is, his advice that the obstetrician should be a surgeon competent to do Cesarean operations. I think this is very unwise. If a man is a surgeon and obstetrician, well and good. If not, a surgeon should be called in case a Cesarean section is necessary.

I know a man of middle age who does nothing but obstetrics; but he has the same opinion of his functions and prerogatives that the doctor gives in his paper. He does Cesarean sections, and at the last report he had a mortality of 33⅓ per cent. That is a horrible mortality to follow this simple operation. This man has never cut off an arm or a leg, nor has he removed an appendix, and yet he presumes to do Cesarean sections. It is absolutely impossible for a man with this lack of training to do good surgery. In a considerable number of these cases I have had to do a hysterectomy for multiple fibroids in connection with the Cesarean section. A man with an absence of surgical training cannot do a safe hysterectomy under these circumstances or any other. We know there are a very few men with large experience, such as Dr. Davis and Dr. Williams have had, who can safely do this work; but I question very sincerely whether it is wise to let it go out from this association that the ordinary obstetrician should assume to be a surgeon competent to do Cesarean sections, hysterectomies, and work of that sort.

Dr. Asa B. Davis, New York City (closing on his part).—Emphasis appears to have been laid upon blood pressure in this discussion. Until comparatively recently I have not placed a very high value upon blood-pressure findings, but, taken in connection with other symptoms, I have learned more and more to depend upon them. It should not go out from this meeting that blood pressure by itself should indicate a definite source of treatment. We must take into account all of the conditions and symptoms, *and* blood pressure in a given case. However, I do believe that a steadily rising blood pressure where formerly it has been within normal limits, or a sudden rise in blood pressure, is often a much earlier indicator of toxemia than we are able to detect by uranalysis. Blood pressure tests are worthy of employment and careful consideration in pregnancy, especially in the late months. We rarely find a high blood pressure in the early months that is due to pregnancy itself.

Too much stress cannot be laid upon the fact that we should do away with routine, such as the standardizing of patients and treatment, while we are dealing with individuals who are not and cannot be standardized. It is now the popular idea that everything should be standardized in order to gain in efficiency. Carrying this idea too far as to its logical conclusion spells dead level stagnation and the end of progress. We always must take into the account that we are dealing with patients with individual conditions and peculiarities. This must continue until we have arrived at a far clearer idea of the underlying causes of toxemias of pregnancy than is in our possession to-day.

In a former paper I have called attention to Dr. Crile's experiments with indol and skatol, the essence of toxic material fermenting in the intestinal tract. He observed, among other phenomena, that there was increased activity in the suprarenals and that blood pressure was thereby elevated. High blood pressure is almost invariably found in the pronounced cases of toxemia of late pregnancy. As yet, we are unable to state what are the initial causes which express themselves in the symptom complex known as toxemia of pregnancy, but it is my growing belief that it eventually comes down to stasis somewhere along the intestinal tract, with fermentation and the production of indol and skatol (which, among other things, increase adrenal activity) and other toxic ferments, which are taken up by the portal circulation and probably stimulate endocrine activity all along the line. At autopsy upon patients who have died from toxemia of late pregnancy we always find degeneration of the liver with subcapsular hemorrhages, disintegration of liver cells, and hemorrhages in and about the portal spaces. We also always find edema and hemorrhage of the brain. Other viscera are affected to much less degree. Probably the kidneys are next in order. They sometimes show disintegration of the cells, but more often only acute congestion and parenchymatous nephritis. The liver always shows the greatest destructive changes, because it receives, almost directly from the portal system, blood surcharged with toxic ferments absorbed and undiluted from the intestinal tract.

The pernicious vomiting of pregnancy has been referred to as being largely psychic. The psychic element does undoubtedly enter largely into many cases of vomiting of pregnancy. It is doubtful if it is much of a factor in the truly pernicious vomiting of pregnancy. This is a comparatively rare and a most dangerous manifestation of toxemia. It does not occur above two or three times in a thousand cases. The treatment of this condition taxes our skill and ingenuity. In some cases we are apparently able to check the progress and bring about recovery. In other cases, using all known means, we make no impression upon the progress of toxemia; the patient steadily grows worse and dies.

In the late toxemias or eclamptics, by interrupting pregnancy we are usually assured of results within forty-eight hours. The fatal cases have already occurred within this time. Those who have survived will generally recover.

Interruption of pregnancy in the case of pernicious vomiting either does not check the downward progress—it may accelerate it—or where improvement occurs it is very gradual.

DR. SYLVESTER J. GOODMAN, Columbus, Ohio (closing on his part).—I am not disappointed, in that practically no one agrees with me regarding the blood pressure observations. I pointed out that things other than blood pressure, such as microscopical findings, blood count, etc., must be considered. If a woman tells us that she has a pain in her toe, I take an account of it. I want to know why. Just as Dr. Davis has brought out, the blood pressure is of value in connection with the other things.

We have men who decide on the necessity of operation for appendicitis because they have a certain blood count; we have other men who decide that there is danger of eclampsia because a woman has a certain blood pressure. The point I wish to make is that blood pressure is only one factor in the general observation of the patient. Every point in the examination of the patient is of value, but no single symptom must be made paramount and absolutely indicative of certain oncoming complications.

There were one or two other matters I brought up in my paper, and one of them referred to hemophilia in antepartum care. A woman, a hemophiliac, who had a terrible postpartum hemorrhage at her last confinement, has engaged me to confine her in the near future. She is a known hemophiliac; the laboratory proved it, and we know it to be a fact. If there is any one who can tell me exactly how to deal with that case, I shall be tempted to act on the suggestion.

As to the breasts, I have used alum for toughening the breasts. Immediately before retiring, the patient applies the alum to the nipple. Just before getting into bed cocoa butter is applied on to the nipple. Immediately on awakening, in the morning, she repeats the process. In this manner we secure an elastic, tough nipple.

DR. MCPHERSON (closing the discussion).—Both the papers of Dr. Davis and Dr. Goodman are of such a character that none of us can fail to agree with practically everything that they have said, and if every one would carry away what they have told us about prenatal care, they would have a great deal less trouble with their patients.

One thing I want to say in connection with what Dr. Davis said and to which Dr. Baldwin referred is this: I do not believe Dr. Davis meant to say, that an obstetrician should not be able to do any surgery except Cesarean section. From my understanding, he said that the obstetrician should be a general surgeon. In that I heartily agree. I think the condition ot a woman in labor is absolutely a surgical one. The vagina is a surgical field and one has to have surgical technic in order to take care of such a condition; if a man is not surgically trained, he does not have the technic. It is true, the great majority of cases will be confined by general practitioners. There is no doubt about that, and they will not have as good results as the man who is surgically trained unless they are surgically trained also. A man has no business to call himself a specialist in obstetrics unless he is a surgeon as well.

In regard to blood pressure, I believe Dr. Goodman was misunderstood. After hearing him close the discussion on his paper, I know he attaches a good deal of importance to the value of blood pressure along with other things.

I also agree with Dr. Goodman thoroughly about books for the expectant mother. I object to the obstetrician who gives out printed cards of instructions to his patients. If we take charge of a patient, we have a right to make it a personal matter, and sit down and talk the thing over with her, and give enough time to make her understand what she is to do and what she is not to do, and if she does not understand what we say to her, we can talk to her again at a subsequent visit, and not hand her a card or a book and say, read this or that. We must individualize and not treat all patients alike.

I would like to place a ban to riding in automobiles during the entire duration of pregnancy, although it is very difficult in these days of automobile transportation to keep pregnant women from taking rides in motor cars. Dr. E. P. Davis, of Philadelphia, brought out the danger at a meeting some years ago, and I have followed his advice ever since. Some of these patients do not mind; they ride just the same if you tell them not to do so. Nevertheless, you have discharged your responsibility in the matter and in this way may save a great deal of trouble.

Regarding the care of the nipples, it has been thoroughly demonstrated that some form of ointment is the only desirable thing to use on the nipples. Alcohol is hygroscopic, tends to macerate the nipple, and makes it worse. What we want is a soft nipple which will not crack in between the tough spots, and since I have been using lanolin I have had far less trouble with fissures and tenderness.

As far as Dr. Pantzer's comments on catharsis go, there are two things I want to say. First, it does not make any particular difference in the series of cases whether the temperature be taken by rectum or by mouth when it comes to figuring out the comparative percentages. As a matter of fact, it reduces itself, and I think Dr. Pantzer so expressed it, to individualism. Nobody in the world believes any more than I do if I have a temperature in a certain case, in ascertaining its cause. When I get a run of cases in the wards where there will be half a dozen running a temperature of from 100.2° or 100.6° down to 99° and then up to 100.4°, that is the type of case about which I was speaking, and such cases do better if you do not purge them in a routine way.

As far as Dr. Burckhardt's statement of getting these patients up early is concerned, I believe that this is the most undesirable procedure in the puerperium that any one can do for a number of reasons which I will not go into at this time, except to say that it was necessary for us to study our cases carefully with regard to the cause of subinvolution, and we found in those cases that got up early we had many more instances of subinvolution, many more flabby abdomens and other complications. I believe it is improper to get patients out of bed until involution is complete.

Dr. William D. Porter, of Cincinnati, Ohio, read a paper on

A METHOD OF PLACING SUTURES IN IMMEDIATE REPAIR OF THE PERINEUM.

(For original article see page 701.)

Dr. James A. Harrar, of New York, read a paper on

MEDIAN EPISIOTOMY IN PRIMIPAROUS LABORS.

(For original article see page 705.)

DISCUSSION ON THE PAPERS OF DRS. PORTER AND HARRAR.

Dr. J. Henry Carstens, Detroit, Michigan.—The last paper shows us that there is no need for the first paper. If you do an episiotomy and have no rupture of the perineum, what is the use of doing the other? I think there is less danger from infection from the anus and the wound will certainly heal just as well.

As far as the second paper is concerned, I have listened probably to some sixty on the subject of the correct way of placing the sutures in operating for torn perineum, and the authors finally hedge and say that sometimes there are variations, and then you must place the sutures somewhere else and put them in differently just as Dr. Porter did. What is the final outcome of it? In my judgment there is *no one* correct way of placing sutures and sewing the perineum. You can do it anyway that you please. I do it now, not with one of these large big needles that you put in on one side and pull out on the other. That is a good way to produce tetanus. I use a small needle and bring the tissues together as accurately as I can, not too tight and bring all the muscles together. If you need a stitch or two in the skin of silkworm gut, you can put them in extra, and thus hold it together.

Dr. Edward J. Ill, Newark, New Jersey.—I cannot see how Dr. Porter is going to bring the tissues together if he parallels his sutures. Sutures put in that way will purse string the tissues. The way it should be done is to give the suture material a wide sweep. The farther you go out the safer you are, thus bringing the tissues together you will approximate broad surfaces. I have studied this subject for over thirty years, and I have had eighty-six complete lacerations sewed up without a single failure. When this Association met in Newark two years ago I showed the operation then. We often forget that the sphincter muscles are surrounded by fascia; that all these fascias and muscles are inserted into the vagina and skin, and unless you go within that sphincter with the first suture and bring the inner end of the sphincter together you have a good reason for failure. To be sure, if nothing happens to the wound I would sew up a fresh tear as well as an old tear. I would sew up the rectum first, most carefully casting aside any instrument, suture or ligature which touched the mucous membrane and thus becoming infected. The moment forceps, suture or needle touches the mucous membrane of the rectum or the skin it must be discarded. When you once have the rectum walled off the rest is easy. But the main thing I want to speak of is not to pull these tissues together like a purse string.

Dr. Albert Goldspohn, Chicago, Illinois.—I am sorry that I must disagree with Dr. Porter in principle and on anatomical grounds. The circuitous stitches which he places begin on the skin, go way up over the internal angle of the wound and come out on the other side upon the skin, and are tied on the skin. This method of suturing converts the longitudinal wound into a round one by unnatural purse-string sutures. This is as unsurgical as it would be to close even a small abdominal incision by purse-string sutures. The torn parts are jumbled together but are not brought into individual coaptation as needed for real repair. Aside from the superficial soft parts, these tears usually injure the more resistant facial urogenital diaphragm (triangular ligament) and the levator structures beyond. These important bearing structures in the perineum should be given the best possible chance for individual reunion; and this can be done only by purely transverse and buried suturing. I have always criticized practitioners when they followed the essayist's type of suturing a fresh laceration of the perineum, for the reasons mentioned; and furthermore, because such purse string and also figure-of-eight sutures tied on the skin, shorten the posterior vaginal wall; and this is wrong because it acts in a direction opposed to normal anteversion of the uterus.

Inasmuch as good exposure and the most nearly exact reunion of the parts in the upper angle of the fresh tear in the vagina by buried suturing is aided much by lateral retraction of the outer parts of the wound, it is advisable to suture that inner portion of the wound first also in cases of complete tear, with a constant current of water running down over the tear in the rectum, to make it innocuous to the sutures used. After this has been done, sew up the tear in the rectum and the sphincter next with great care, as Dr. Ill has said, to keep the sutures from contact with the mucosa of the bowel. When this suturing of the bowel wall with catgut has been done, it is well to pass a tension suture of silkworm gut as a loop within the rectovaginal septum around the buried suturing of the bowel wall, and to tie it before finishing the so-called perineal body. By this suture the little fistula will be prevented which otherwise is apt to remain just above the united sphincter ani.

Dr. John Norval Bell, Detroit, Michigan.—I should like to amplify Dr. Goldspohn's remarks relative to the operation of Dr. Porter being anatomically incorrect. I think I can best illustrate what I have to say by referring to Dr. Harrar's charts. Dr. Porter puts a stitch under the vaginal wall and brings it down so as to pucker up the levator ani muscle, and leaves a space here through which parts can herniate. We all know that if we shorten the posterior wall we naturally pull upon the vaginal wall where it is attached to the posterior surface of the uterus, and in that way tend to produce retroversion of the uterus during the puerperium.

Dr. Henry Thomas Sutton, Zanesville, Ohio (by invitation).—I desire to call attention to the time when to repair the perineum. I have been doing obstetrical work for a great many years, and it has only been in the last few years that I have discovered repairing the perineum immediately after tying the cord, and before the placenta is delivered, is the simplest and easiest thing in the world. The wound opens right up; you do not need assistance, you need not pull the patient across the bed; you simply spread her knees apart and there is marked bulging of the wound. After the placenta has been delivered, all the parts contract promptly and with all the assistance you get around it has been difficult for me to do a satisfactory perineorrhaphy after the placenta has been delivered. It has not been referred to today, and I have never heard or seen it referred to. Every time I do it now I think of how I used to struggle and worry trying to get a good view, especiallyat night when the light is not good. You will have almost no pain; the anesthetic that has been administered in the last stage of labor will be quite sufficient. In slight tears you will not need to give any more anesthetic, and only since I have been doing repair before the placenta is delivered has my work been at all satisfactory, and I hope that the gentlemen is closing the discussion on their papers will refer to it. I think it is seldom that it is necessary to cut the parts. If you are watching your case closely, dilating, helping to stretch the parts as the head comes down, you will be able in most instances to deliver without dividing the tissues. Frequently the head is gotten through without much of a tear, and I then congratulate myself I have not unnecessarily mutilated the cases. Like Dr. Carstens, I do not use a large needle any more but a small one, and with the placenta undelivered it is easy to do repair. You do not need to be told how to put the stitches, the manner will suggest itself right there, and particularly the manner of bringing the muscles and fascia together that the doctor has just referred to.

Dr. Francis Reder, St. Louis, Missouri.—Dr. Harrar has reminded us that there is still an operation known as episiotomy. This operation dates as far back as 1742, when it was suggested by Ould. Not until 1885 did this helpful measure receive due attention. At that time Credê and Manton became its advocates. During Ould's time Ould anesthetics were unknown. Evidently something had to be done to relieve the pain caused by the muscular rigidity at the inferior strait and this operation was devised. Dr. Harrar tells us to make it in the median line. Here he differs from the old authorities. He has given us convincing reasons in doing so. The middle of the perineum is the toughest part of the perineum. It seems that nature has taken this precaution to protect the rectum from injury. Episiotomy, lateral or median, like all operations in gynecology, has a definite place. If you meet with a head which is unusual in size, or encounter a difficult face presentation, or a rigid perineum or a short perineum, and if you are going to do something to minimize a perineal tear, an episiotomy will help out.

The difficulty in understanding the perineal operation as presented by Dr. Porter and by those who have taken part in the discussion is the difference between the primary and secondary perineorrhaphy. I have delivered many women after Dr. Porter has done the operation he has described, and I have always found the pelvic floor in admirable condition. What we want is a perineum that fulfills the function of former days. It is a very common thing to have a woman come to us suffering every time she has sexual intercourse because nature has not been imitated. The parts have not been restored as an elastic, small, perineal body, but there is a perineal body about three times as big as nature made it, and the operator thinks it is an improvement.

So far as stitches going through the rectovaginal septum are concerned, there is a tendency of the rectal contents to work through between them causing a fecal fistula. After a complete laceration is repaired, as Dr. Porter has described it to you, there will be no danger of fistula because you have successive sutures one upon the other parallel to the bowel, guarding against the possibility of material passing through. As long as the sutures go through the rectovaginal septum, you have spaces intervening which invite the rectal contents to go through.

So far as shortening the vagina is concerned, the posterior vaginal wall is long enough after delivery. Pulling it down temporarily to fill the space does not mean you have shortened permanently the posterior vaginal wall. That criticism has no standing in court.

As to the paper on episiotomy, it seems as though the author had actually studied the cases at the bedside. If you have a perineum that is growing longer and longer with distention, the thing to do is to split it square down in the middle and you do not have to go off to the side. That is the only criticism I have to make. You do prevent these deeper lacerations by this act. Why? The indications of danger to the pelvic floor are these: small vulva, gradually looking upward before the advancing head. What is happening? The pelvic floor is being pushed down and the posterior vaginal wall cannot follow it. You can always demonstrate before there is any danger of tear externally splitting of the mucous membrane in one sulcus or in both. Whenever there is a splitting of the mucous membrane in one sulcus or both, that is the time to split the perineum. After the perineum has been lengthened, by making a cut to enlarge the vulva you prevent further distention. This procedure will prevent these deeper lacerations of the pelvic structure which cannot be found at the time. The fact that the perineum did not tear is no indication that this woman has not been practically ruined physically, because after the vulva has been distended without laceration, the great stretching may have separated the deeper structures which cannot be detected, but which will result in ultimate prolapse. If you have a perineum that is stretching entirely in its lateral diameter, expect complete laceration. In that case it is cut on the side, but you will get very little help. I cut both sides rather than have a tear into the sphincter. I never cut to the side when I have space to cut in the median line. The center is the strongest part. One gentleman says, is that the reason laceration occurs in the midline. When you approximate identical surfaces, they come together perfectly and unite perfectly.

I have had unusual opportunity to observe Dr. Porter's work. I have seen him do the operation he has described; I have taken care of his patients afterward, and I can truthfully say to you that this is a method that works.

Dr. Ross McPherson, New York City.—In regard to the perineum, it seems to me that I get more lacerations of the perineum than anybody I know of, although I have pretty good results from the repair. I follow these cases for a long time. There is a good deal in what Dr. Carstens has said. I come to this and other meetings and I get a new operation every time I come. I try it and it does not work any better than others. The whole proposition is to restore the parts as they were formerly, or as they were torn, and if you put mucous membrane to mucous membrane and fascia to fascia and muscle to muscle, it makes very little difference, if you know how to put the sutures in.

Dr. Harrar's paper on episiotomy was very interesting. I have seen a good deal of this work, and I think in its place episiotomy is the best thing that has ever been done in obstetrics. Anyone who can always predict just when he is going to have a laceration of the perineum, where it is going to be, how extensive it is, and what the result to the patient is going to be after he has sewed up the laceration, does not need to do episiotomy. But I cannot. I do not know what kind of laceration I am going to get when I am applying forceps. I do not know whether the tear is going to be in one direction or another, or whether I am going to lacerate a large portion of the vaginal canal. On the other hand, I do know that if I make a proper median episiotomy, I shall have a clean edged wound, and when the operation is over the parts come together in good apposition. You can see the layers, fascia, muscle, mucous membrane and skin, and they heal nicely. When a patient gets through with the puerperium we cannot tell whether she has had a laceration or not, neither from the size of the perineal body, the scar, nor the position of the uterus. I am a strong advocate of this operation in cases where there is no question whatever of our getting a laceration. I do not like the lateral operation because in my hands the incision does not heal as well as the median incision.

Dr. Porter (closing on his part).—I thought I made myself very plain in starting out by stating what was necessary to get a good result in a primary operation. I made no effort to discredit other operations; I simply advocated the operation I have described because it is simpler and easier. A number of the objections raised hardly apply to this method.

Dr. Goldspohn criticizes me and speaks of bringing down all tissues from above, and say that if he closed the abdominal wall with longitudinal sutures, he would have a similar condition. It is not so at all. In the abdominal wall you have continuous and identical structures. You have the same structures at the lower end of the incision as at the upper end. It makes no functional difference if you pull the septum down. The patients would often be better if the posterior wall were shortened after labor. The damage is not limited to transverse structures. Often a great strain is thrown upon the longitudinal structures which are stretched until the posterior wall is lengthened, sometimes several inches. What is the objection to shortening it by the fraction of an inch? The objection, it seems to me, will not hold.

Those of you who have seen Joseph Price close the abdominal wound in the older days know that he got just as good results with through-and-through sutures as you get now by bringing individual structures together, because the sutures were put in accurately. The suture went through the skin very lightly, caught the tendons and muscles deeply, and came through the peritoneum very lightly. When you close the wound the structures come together accurately, the only exception being in case of fat abdominal walls. There tier sutures are better. In the ordinary case there is no advantage. I watched these cases in my early days very closely, and the percentage of hernias was no greater than it is now. That statement will be confirmed by many of the older men in this room.

Dr. Ill mentioned an objection but when the suture is tied it does not take any such shape as he told us. You look at the silkworm-gut sutures when you take them out. If you take them out carefully they resume their circular shape. It is entirely a matter of mechanics.

Dr. Harrar (closing the discussion).—It is the object of my paper to call attention to the fact that lacerations occur in about 44 per cent. of all primiparæ (that has been our experience, and I think we are as careful as any) and a greater effort should be made to control and repair these lacerations at the time. If the general practitioner will more frequently have resort to episiotomy, the gynecologist will have less to do later.

DR. ARTHUR H. BILL, of Cleveland, Ohio, read a paper entitled:

OBSERVATIONS ON THE PROBLEM OF HEMORRHAGE IN OBSTETRICS.

(For original article see page 708.)

DISCUSSION.

DR. ASA B. DAVIS, New York City.—Dr. Bill's experience entitles anything which he says to careful consideration and credence. My own experience has led me to use very little ergot or pituitrin. In the Lying-In Hospital we do not use either of these agents in a routine manner. I have very decided views about pituitrin. I believe that we should no more resort to this agent during labor than we should to the use of ergot. In the service of the Lying-In Hospital we repeatedly witness terrible and fatal results chargeable to the use of pituitrin by practitioners. For example, a few months ago an elderly multipara was brought in with rupture of the uterus. There was no delay in opening the abdomen, which was full of blood and she died on the table. Pituitrin had been used freely. In early November, two years ago, in five consecutive days we received five cases with contracted pelvis, uterus tightly contracted about dead fetuses. Delivery was by craniotomy. Pituitrin had been used in each case. The withholding of pituitrin and a timely Cesarean section would have saved all these children, eliminated the suffering of long labor and the impending danger of septic infection and rupture of the uterus. Five years ago, during the first ten days of July, two cases were sent in from the tenements with rupture of the uterus due, as I believe, to the use of pituitrin. Both mothers and children died. These are but a few concrete examples of the results of the use of pituitrin which actually have come under our observation.

About four years ago, as I have previously stated in this Association, in twelve consecutive cases of cesarean section I gave pituitrin just before starting the anesthetic. Upon opening the uterus there was very little bleeding. The uterus was tightly contracted, so that the cut edges of the wound were very thick and almost bloodless. No difficulty was experienced in delivering the child; but when suturing the uterus was well begun, in every instance, the uterus rather suddenly relaxed and profuse hemorrhage followed. If pituitrin is to be used during Cesarean section, others have reported that it should be injected as the uterus is about to be opened. Uterine contraction results in about three minutes. Its effect does not last long. Ergot acts much more slowly and over a longer period. I use this as routine in cesarean operations, injecting 25 minims just before starting anesthesia. Postpartum hemorrhage is rarely seen in our service, considering the number of deliveries.

I am in accord with Dr. Bill when he states that more cases of placenta previa should be delivered by Cesarean section. This operation would save many cases who die for the want of it.

Dr. Abraham J. Rongy, New York City.—I think it is a good dictum in obstetrics, that every case requiring antepartum treatment should go to a hospital, and with careful watching of these cases by the obstetrician I am of the opinion that fewer cases would have to be Cesareanized. However, a patient who bleeds more or less profusely and whose cervix is undilated, with no means of accurately telling whether we are dealing with a central or marginal placenta-previa, should be Cesareanized in the interests of both mother and child.

With regard to the use of pituitrin in the third stage of labor, I must say that I have not been so fortunate as Dr. Bill in his series of 1000 cases. I have used pituitrin in the third stage of labor with the resulting continued contraction of the cervix, so much so that it was impossible for the placenta to be delivered. In one instance it was fully three hours before the cervix was sufficiently relaxed for placental delivery. It seems to me that before using pituitrin the patient should be examined as to the condition of the cervix. With the cervix intact, the chances of contraction are correspondingly greater and we are likely to get into trouble by using pituitrin in the third stage of labor. I still use pituitrin before performing Cesarean section.

Dr. Irving W. Potter, Buffalo, New York.—Pituitrin is used immediately following delivery of the baby by me in almost all cases, and it is also followed by ergot when necessary. There is one objection, as Dr. Davis stated, namely, exaggerated afterpains. We find following that method we get a firmer contraction of the uterus and the placenta is expelled quicker.

There is one point about the giving of pituitrin that is important, namely, it should be given immediately after the delivery of the baby. If you give pituitrin after the birth of the child you will not get any such contractions as Dr. Rongy spoke of.

Dr. Ross McPherson, New York City.—Some years ago our Secretary (Dr. Zinke) read a paper before this Association in which he advocated Cesarean section in placenta previa, and the Association opposed him, and then a few years later I wrote one on the same subject and was likewise opposed. It now seems gratifying to know that it is the general consensus of opinion that the operation is a good thing to do in certain types of placenta previa, with which I most heartily agree.

In general, I think Dr. Bill's paper sounds a very excellent warning note in regard to the use of pituitrin. I had the pleasure of talking to him about the use of it in the third stage yesterday, but I have not tried it in that connection, being afraid of it for the reason mentioned by Dr. Rongy. When a man has had the experience that Dr. Bill has had with it, however, we cannot take his statement lightly, and it deserves a good deal of thought before we discard it entirely.

In regard to its use before Cesarean section, if given just at the time the incision is made it facilitates uterine contraction. Its efficacy in making these patients void and in the prevention of distention after operation is most satisfactory.

DR. BILL (closing the discussion).—I heartily agree with Dr. Davis that pituitrin in the first and second stages of labor is a dangerous thing and I very seldom employ it. The reason why I started to use it in the third stage of labor was the fear of postpartum hemorrhage. After one has had some experience with severe cases of postpartum hemorrhage and has almost lost a patient, he is willing to resort to almost any precautionary measures to prevent it. If there is anything I dislike to treat it is a marked case of severe postpartum hemorrhage.

I have not had the experience of which Dr. Rongy speaks, of having the placenta retained in the uterus. Pituitrin is given immediately with the birth of the child, and in my experience the effect of pituitrin does not last anything like three hours. Its effect is fleeting. It wears off by the time when we need necessarily deliver the placenta.

There is one further point which I wish to mention. Dr. Goodman spoke of a case of hemophilia and the method of treating such a case. Prophylactic blood transfusion would be the proper means of handling that particular case.

DR. H. WELLINGTON YATES, of Detroit, Michigan, read a paper on

INVERSION OF THE UTERUS.

(For original paper see page 712.)

DISCUSSION.

DR. SYLVESTER J. GOODMAN, Columbus, Ohio.—I want to report a case of inversion of the uterus, showing the remarkable ability of the patient to recover after having been badly handled. The patient was a young woman who, in the third stage of labor, was subjected to strong traction on the cord. Complete eversion resulted and when seen the uterus lay in the belly. In order to keep the uterus soft it was thoroughly anointed with lard found in a kitchen in the country and packed with cotton. But before cleansing the lard and other foreign material from the uterus as best we could, we painted it with dilute iodin, reduced the inversion, and she got well without a rise of temperature.

DR. JAMES E. DAVIS, Detroit, Michigan.—I want to cite briefly the history of one case that came under my care during the past year, a case where the inversion had been caused by pulling upon the cord. The case was first observed about twelve hours after the delivery of the placenta. At that time there was complete inversion of the uterus. The replacement was done by making pressure upon the softest portions of the inverted structure and after complete replacement had been accomplished under surgical anesthesia, two ampules of pituitrin were given. A period of twelve minutes was allowed to elapse, there was absolutely no contraction wave of the uterus produced by the pituitrin. After that two ampules of ergot were given, and within a period of four minutes a contraction wave beginning at the fundus of the uterus was very perceptible and continued with such efficiency that the hand was pushed down and out of the uterus.

Dr. Abraham J. Rongy, New York City.—All cases of inversion of the uterus, after successful replacement, in addition to packing, should be placed in the extreme Trendelenburg position to prevent recurrence of this condition.

Dr. Yates. This patient was placed in the Trendelenburg position.

Dr. Francis Reder of St. Louis, Missouri, read a paper entitled:

"THE CYSTIC OVARY."

(For original paper see page 719.)

Note.—The publication of the transactions will be continued elsewhere, of which due notice will be given.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of October 14, 1919.

The President, **Dr. Wilbur Ward**, *in the Chair.*

Dr. Dougal Bissell reported a case of

ASSOCIATED EXTRA- AND INTRAUTERINE PREGNANCY.

Mrs. L., Hosp. No. 20216, aged twenty-eight, married four years. No children. One miscarriage three years ago, not induced. Last menstruation Dec. 15, 1917, lasting four and one-half days. Previous menstrual history normal. On Jan. 25, 1916, she began to have a bloody discharge, which continued until operation Feb. 20, 1918. On Feb. 7th she experienced a sudden and sharp pain in the right adnexal region associated with an attack of vomiting. The pain continued to some extent until Feb. 16th.

Vaginal examination showed a tender mass, size of a small apple in right adnexal region; the uterus, soft and larger than normal, was seemingly attached to this mass.

A Diagnosis: Ectopic gestation in the right tube was made.

On opening the peritoneal cavity a typical ruptured ectopic of the right tube was disclosed. Blood clots filled the pelvic cavity, but there was no active bleeding. The right tube and ovary formed a tumor mass adherent to the uterus and pelvic floor, both ovary and tube were removed. The left tube and ovary were slightly adherent, otherwise normal; adhesions freed. The uterus was large and soft presenting the appearance of a two months' pregnancy. The patient made an uneventful recovery.

Pathological Report.—Tubal gestation; the ovary contains a fully developed corpus luteum.

The vaginal discharge ceased immediately after operation.

The patient entered the hospital and was delivered normally Aug. 4, 1918, of a female child weighing 4¾ pounds; which lived and left the hospital in good condition.

The first question of interest is whether these conceptions occurred at the same or at different times. The ectopic gestation was in the right tube and the ovary of this side contained a corpus luteum fully developed. The left tube was slightly adherent as the result of partly organized blood clots, but was patent. The left ovary was also slightly adherent but contained no corpus luteum. It is reasonable to suppose that the left tube was normal before the right tube ruptured. If by any chance the fecundated ovum which developed in the uterine cavity, reached the cavity through the right tube, it must of necessity have passed through this tube at a time previous to the lodgment of the ill-fated ovum, but, because the right tube demonstrated its inability to successfully pass a fecundated ovum it is more than probable that the fecundated ovum which developed in the uterine cavity reached its normal habitat not through the right tube but through the left tube. As there was found only one corpus luteum, and that one located in the right ovary, the ova must have been born from this one ova sac, one of which ovæ found lodgment in the right tube, the other in the uterus.

At the time of rupture of the ova sac there is found in the pelvic cavity, an observation I have frequently confirmed, a serous fluid, slightly yellow in color and in sufficient quantity to float and spread open the fimbriæ of the tube. Each tube is free and long enough to permit of an excursion of its fimbriæ to and beyond the middle line of the pelvis.

It is known that the tube at time of ovulation floats in a very considerable amount of field and is thereby permitted to sweep not only its immediate vicinity in search of the ovum, but an area considerably beyond; that the ovum or ova float and having no motion of their own but are propelled by wave motion, the result of peristaltic action, uterine and body motion, to every part of the pelvis where fluid is present and that the current through the tube created by the cilia of the fimbriæ and tubal canal is sufficient to attract the ovum and convey it to its destination. It seems strange that we should ever have thought that the ovum of the ovary of one side must necessarily pass through the tube of the same side.

The next question is the advisability or inadvisability of curettage, as a preliminary step in cases diagnosed as ectopic gestation. It was more or less a custom when the subject was new to curet before removing the gestation sac unless the patient was *in extremis.*

The inadvisability of curettage as a preliminary step, gradually forced itself upon the profession and to-day most men consider it not only unnecessary but at times harmful.

Had this case been curetted the uterus would have been emptied of a normal gestation, with the discovery and removal of this gestation, confusion regarding diagnosis would inevitably have occurred and the necessity for an immediate intraabdominal attack would most certainly have been seriously questioned. If the operation had not been done, the patient's life would have been greatly jeopardized.

Other conditions may be cited to illustrate the possible harm which might result from a preliminary curettage; as for instance, in cases of interstitial pregnancy and consequent rupture of the uterine wall; here curettage might result in further injury by the curet passing through the rupture and carrying with it sepsis into the peritoneal cavity.

Finally the practice of curettage as a preliminary step is an advisable for the added reason that, though the history may be strongly suggestive of ectopic gestation, the diagnosis may be absolutely incorrect, and the damage done serious, as when pregnancy exists in one cavity of a bicornate uterus or in a case of latent inflammatory adnexal disease.

DISCUSSION.

DR. JOHN O. POLAK.—Dr. Bissell's case is one of the most interesting reports that I have ever heard. First of all, I want to ask Dr. Bissell if it is his conception that both pregnancies resulted from ova coming out of the same follicle. Second, why, in the light of our experience, removal of the ovary containing the corpus luteum of a two months' pregnancy, before the placenta was formed, did not disturb the further development of the pregnancy. It has been assumed that, unless the placenta is formed, the removal of an ovary containing the corpus luteum controlling the pregnancy, tends to terminate that pregnancy. Another point that I would like to ask is whether the other ovary presented any evidences of a corpus luteum cyst that could possibly explain the origin of his ectopic and allow the ovum from the real corpus luteum to explain the pregnancy.

DR. L. W. STRONG.—"I do not wish to answer Dr. Polak's question before Dr. Bissell has had a chance to answer it, but I wish to state that I have knowledge of two cases at the Woman's Hospital where the corpus luteum was removed at the second month without disturbance of pregnancy.

"In regard to curettage, it has been my observation that not infrequently in ectopic gestation no decidua has been formed and consequently, as far as I can see, there is no need of curetment."

DR. HERMAN GRAD.—"In a few cases of ectopic I have had rather large masses of decidua come away and I did not curet those cases. I believe if decidua does form it will come away without curettage."

DR. R. M. RAWLS.—"If I might answer Dr. Polak's question, I would like to say that I can add a third case to the two Dr. Strong mentioned as being under two months. It was prophesied at the time of the removal of the corpus luteum in this case, that the woman would abort in five days, but, instead, I delivered her at full term."

Dr. Dougal Bissell.—We have been taught, as Dr. Polak states, that when the corpus luteum is removed, abortion follows. I have had abortion follow removal of the corpus luteum alone, but there have been reported cases as both Dr. Strong and Dr. Rawls have stated, where the corpus luteum has been removed without interrupting pregnancy. I have on several occasions removed the entire ovary with its corpus luteum without abortion following. On the other hand, I have on one occasion removed the entire ovary with its corpus luteum and had abortion to follow within ten days, although corpus luteum extract was administered from the time of operation to the moment of abortion. In regard to the other questions, they were answered in my report.

Dr. John O. Polak presented a report of

TWO CASES OF CARCINOMA OF THE RETAINED CERVIX YEARS AFTER SUPRACERVICAL HYSTERECTOMY.

The incidence of cancer in the retained cervical stump following supracervical hysterectomy for fibroid, is a reality, which cannot be denied, and the occurrence is of such frequency as to cause some apprehension in the minds of those gynecologists who have been in the habit of operating by the supracervical technic in all fibroid cases.

During the past year two such cases have come into my service at the Long Island College Hospital, and I take this opportunity to present a brief abstract of their histories: Mrs. B. H., aged forty-six, was referred to me in May, 1919, by one of my former students; she complained of a hernial mass protruding through the lower angle of her abdominal wound and of a bloody vaginal discharge which had continued for the past six weeks. She was married and had one child twenty-five years ago. The labor and puerperium were normal, but following the birth of her child, she complained of persistent pain in the lower abdomen and her menstruation became so profuse as to invalid her. During the four years subsequent to her delivery, she bled excessively at each menstrual period and at the age of twenty-six she was confined to her bed for eighteen months, owing to the excessive amount of bleeding. A fibroid was diagnosticated and she was operated upon by Prof. Faure in Paris, who did a supracervical hysterectomy. She was completely relieved of her symptoms and had no recurrence of bleeding until the 1st March, 1919, when she noticed a bloody vaginal discharge following marital relations. On her admission to the hospital in May of this year, examination showed a large postoperative ventral hernia in the lower angle of the old abdominal wound and a friable growth of the partial cervix. A diagnosis of cervical epithelioma was made and a radical extirpation of the cervix and parametria was done. Serial sections through the excised parametrium, showed that the operation went well beyond the invaded area. The pathologist report confirmed the diagnosis of cervical epithelioma.

The Second Case.—Mrs. S. E. had been previously operated by one of my Brooklyn colleagues. The body of the uterus, the left ovary and both tubes, had been removed in 1915. This patient presented herself on Dec. 20, 1918, complaining of lumbar backache and a profuse serosanguineous vaginal discharge. The findings at that time were as follows: The patient was a well-nourished moderately stout, anemic woman, with a fair heart; there was a soft hemic blow heard over the precordia, well healed abdominal scar in the median line except for a weak spot in the fascia ½ inch above the pubis. The pelvic floor was lacerated and there was a moderate rectocele and a slight cystocele. The cervix was cystic and deeply lacerated, and on the posterior lip a hard infiltrated area with a superficial ulceration was noticed; this lip when grasped with a tenaculum forceps bled profusely and showed extreme friability. A presumptive diagnosis of cervical cancer was made and the patient referred to the hospital. A portion of the infiltrated posterior lip was excised with the cautery, and submitted to Prof. Murray for diagnosis. The pathologist reported an epithelioma. On Jan. 11, 1919, she was reoperated. After first repairing her pelvic floor, the abdomen was reopened and the cervix and conserved ovary, which was cystic and buried in the folds of the broad ligament, were removed by the radical operation. Serial sections through the excised tissues showed that the operation had been carried well beyond the invaded structures.

These two cases illustrate the possible danger of leaving the cervical stump in hysterectomy particularly in women who have borne children. By retaining the stump, we not only fail to cure many women of their leukorrhea, and their backache, which frequently persist owing to the latent infection in the cervical tissues and its parametrial extension, but we actually subject them to the possibility of the occurrence of cancer in the stump.

DISCUSSION.

Dr. W. E. Studdiford.—"One of the points of interest in these cases is the fact that both of the women had borne children, and I think that the question of complete hysterectomy or supravaginal hysterectomy is dependent on the condition of the cervix at the time of operation; also the social status of the woman.

"Now, his second case, with cystocele and rectocele, I should judge that the man who operated there first considered that the fibroid operation was the essential one and neglected to do, or felt that it was impossible to do plastic work at that time. That being so, he probably felt that the support of the cervix was essential for the support of the bladder, and possibly took some chances on the cervix, so that I think it is unfair to condemn a supravaginal hysterectomy, unless we modify it with the statement that in the presence of a lacerated or a cystic or degenerated cervix, which would be a contraindication for leaving the cervix.

"On the other hand, there is one point in the technic of supravaginal hysterectomy that I think might well be considered, and that is the removal of the cervical endometrium at the time of operation. It has been my habit in these cases where the cervix is left, unless it be the type of case where we try to leave some ovarian tissue with the possibility of having some menstrual periods, to simply leave the cervix for its bladder support. In that case I simply ream out, or take out, a wedge or cone of the cervical mucous membrane, and you can do that down to the internal os and obliterate the canal. With the cervical mucous membrane removed, the chances of carcinoma developing are correspondingly diminished.

"Dr. Polak's hysterectomy technic is similar to the one that I have been doing for the last four or five years, except that, instead of scissors, I think he will find the removal of the cervix is much more readily done by simply taking a knife, making a stab into the vagina, turning the cervix up and cutting off the mucous membrane. This causes less soiling and disturbance of the tissue than by snipping with scissors.

"There is also one point in the support of the vault of the vagina which I have tried in a few cases, and that is, instead of a circular removal, doing a wedge-shaped amputation with the apex of the V in the middle line, so that you bring the two stumps of the broad ligament together, with the result that there is a stronger base across the vault of the vagina than by sewing it transversely.

"It is also a good point in the technic instead of a through-and-through stitch in the vault, to use a mattress stitch, sewing the edges so that they are inverted into the vault of the vagina. The raw surfaces thus become healed in the middle-line and you are not apt to get the little area that sometimes results from bringing the mucous surfaces in apposition."

DR. HERMANN GRAD.—"I would like to add a case of carcinoma of the cervix after hysterectomy which I operated on a few years ago. The patient remained free for eighteen years after the primary operation for fibroid before the carcinoma of the cervix developed. When she came to the hospital there was considerable involvement of the vault of the vagina and it was practically impossible to do a clean operation. The cervix was removed and the vagina cauterized but there was a recurrence very soon afterward."

DR. DOUGAL BISSELL.—"It might be stated as a truism that by leaving the uterus or any part of it after any operation, we subject the woman to the possibility of malignancy developing in the tissues left. In two instances I have known malignancy to occur in the body of the uterus after the interposition operation for the correction of procidentia."

"Although we are fully aware that malignancy may occur in any part of the uterine tissue left, it is a question yet to be decided, which is the more desirable; complete hysterectomy, which carries with it considerable mortality as compared to supravaginal hysterectomy, but less risk of malignancy, or supravaginal hysterectomy with less immediate risk to life, but increased risk of malignancy. It might however be said in regard to supravaginal hysterectomy, that should malignancy occur in the cervix left, the condition is not necessarily hopeless, because with the follow-up system of the present day, these cases are carefully watched and malignancy determined in an early stage."

"Dr. Polak has stated correctly that I oppose anchoring of the round ligaments into the cervical or vaginal stump after a hysterectomy, and wishes to hear my reasoning."

"I regard the round ligaments as organs which function only on occasions. With the uterus in normal position, they have no function, but with the uterus retrocessed, as when the bladder is distended, they become tense, and thereby resist the temporary displacement of the corpus occasioned by the full bladder. As the bladder empties the muscles of the round ligaments are brought into play and in conjunction with the tissues about the cervix, restore the fundus to its normal position.

"I am of the opinion that if the round ligaments are subjected to constant strain they cease to resist after a certain length of time as does all muscle tissue, but granting, for the sake of argument, that the round ligaments when anchored in the cervical stump or vault of the vagina, do influence the position of the tissue in which it is anchored, what influence do they have? Those who favor anchoring the round ligaments, favor it because they are of the opinion that the cervix or vault of the vagina is thereby prevented from descending. Descent of the cervix means its approach to the symphysis or outlet of the vagina. Now the fixed points of the round ligaments are in the inguinal canal on either side of the pubic bone. If the round ligaments act to change the position of the vaginal vault, their direction of action must therefore be toward the symphysis or vaginal outlet. As the cervix and vaginal vault are normally in close proximity to the coccyx, their approach to the vaginal outlet constitutes an abnormality simulating procidentia."

DR. H. C. TAYLOR.—"In the treatment of the cervix in operations for fibromyomata uteri I have followed the plan spoken of by Dr. Studdiford; that is, to ream out the cervical canal and not to remove the cervix. It seems to me that it is done somewhat more easily and with less risk to the patient than the removal of the cervix. I have had one case of carcinoma of the cervix following a supravaginal hysterectomy. Dr. Polak has reported two cases. The actual number of those cases that occur must be small, so small that it seems to me they would be overbalanced by the increased risk of doing a complete hysterectomy over supravaginal hysterectomy, as it is undoubtedly a more difficult operation. If the cervix is diseased remove it. In the ordinary case I would be contented with removing a large part and not the whole of the cervical canal."

DR. WILLIAM PFEIFFER.—"I desire to report, that I encountered a case of carcinoma of the cervix in a single woman, with a nulliparous cervix, hence not lacerated, which supervened six and a half years after operation."

Dr. F. C. Holden.—"I would have Dr. Strong tell us how much influence he thinks reaming out the cervix in the operation of supravaginal hysterectomy can have in the prevention of the subsequent development of cancer of the cervix. We are well aware that most cancers of the cervix are of the epithelial variety. All women who have had children and require hysterectomy should be put in such good condition, if possible, that complete hysterectomy may be done without subjecting them to too much risk. Many of the women who have had supravaginal hysterectomy, during which the cervix was reamed out, continue to have very annoying leukorrhea.

Dr. L. W. Strong.—"I do not consider myself competent to fully answer the question asked by Dr. Holden from the practical standpoint.

"The idea of reaming out the cervix has certainly appealed to me for the purpose of getting rid of the discharges from those deep glands which penetrate the cervical tissue branching and very widely scattered throughout the cervical tissue, the chronic discharges of which presumably furnish the irritant which is the basis of carcinoma of the cervix.

"Naturally, there are two types of carcinoma of the cervix, the glandular, which is rare, and the epithelial (the squamous-cell type), which is the commoner form, and which is the form Dr. Polak has reported.

"Reaming out the cervix is not for the sake of preventing glandular carcinoma, but rather for the sake of getting rid of the glands which cause the secretion which produces the leukorrhea coming down over the squamous epithelium.

"I should suppose that reaming out the cervix would afford a satisfactory outcome.

Dr. John O. Polak.—"I did not expect that my report would bring out so much discussion. In regard to the frequency of this condition, there is a recent paper, I think by Hill, in which he reports some 200 cases collected from the American literature, so there is some probability that cancer in the stump is a fairly frequent occurrence after supracervical hysterectomy. In regard to excision of the cervical mucosa, my impression has always been that partial epithelioma was the most frequent form of cervical cancer and most of the reaming out which has been done by the operators which I have had the opportunity of seeing, has not touched that portion of the cervix giving rise to epithelium. I am also entirely in accord with Dr. Studdiford and with Dr. Taylor that the nulliparous cervix, which has not been infected, associated with a simple fibroid is, in all probability an innocent proposition to leave, but in the woman who has had children, or who has had an infection or an extensive laceration of the cervix, I believe it is better to remove the cervix, whether we do it with the knife or with scissors.'

Dr. Lawrence W. Strong reported a case of

SARCOMA BOTRYOIDES.

This rather unusual form of sarcoma, photographs of which were submitted was removed by hysterectomy from a patient of Dr. Rawls. Its peculiarity consists in the occurrence of grape-like masses of myxomatous tissue which usually either project from the cervix or else fill up the vagina. It is also notable on account of the great destruction of tissue which ordinarily occurs from its growth. It is said to be rather more common in children. It may occur at the fundus of the uterus as well as in the cervix. Its histological character and also the occurrence in young individuals has sometimes led to the opinion that it is a mixed tumor of embryonic type. However, in this instance, there was no sign of any other tissue such as cartilage or bone.

DISCUSSION.

Dr. R. M. Rawls.—"The symptoms were those of a fibroid. There had been bleeding and a gradual growth with pressure symptoms, and the clinical diagnosis, was fibroid of the cervix, and I was not aware, until, by accident, I got into this grape-like mass, that it was not a fibroid.

Dr. W. E. Studdiford.—"How long had the bleeding lasted?"

Dr. R. M. Rawls.—"I cannot recall exactly, but think there was a history of menorrhagia for several months and metrorrhagia for two or three weeks before coming into the hospital."

Dr. Hermann Grad demonstrated

A RUBBER LAPAROTOMY PAD.

In all pelvic surgery it is essential to clear the pelvis of intestinal loops, cecum and sigmoid during the operation. This is accomplished by putting the patient in Trendelenburg position and by packing the intestines away with pads made of gauze. The gauze is moistened with a salt solution to prevent it from becoming adherent to the peritoneum and traumatize its delicate epithelial layers. Experience shows that when gauze is allowed to rest against the peritoneal surface for any length of time even though the gauze be thoroughly wet it will destroy the glistening of the delicate surface epithelium. This is very likely due to the fact that the gauze absorbs moisture beyond the amount it is holding in its meshes and "dehydrates" the surface epithelium. When gauze pads are used during operation it is not an uncommon experience for the surgeon to see striations on the peritoneal surface due to the gauze. An epithelium that has striations on it must have suffered damage and a damaged surface epithelium must necessarily react unfavorably on the patient and favor peritoneal adhesions, which is always to be avoided if possible.

To overcome this difficulty in the use of gauze pads, rubber readily suggests itself. The idea is not original with me. It is well known to the Society that Dr. Dougal Bissel is the originator of rubber envelops for gauze pads which he has been using for several years. For the past two years however I have been using laparotomy pads made of rubber sheeting for the purpose of holding the loops of intestines out of the pelvis during operations. The change in technic has been very gratifying to me. The immediate operative recovery of the patient, where "dehydration" of the peritoneum is prevented, has been much smoother, much less distressing. There has been less distention of the abdomen, less pain, less nausea, and in every way the patients have been more comfortable. I find that it is very seldom necessary to administer any cathartics, as a very satisfactory bowel movement is obtained with simple enemata and peristaltic action of the intestines with the expulsion of gas occurs much earlier and convalescence is established sooner.

I speak in favor of the pads with great confidence and I know that those who will use them will be pleased with the results obtained not alone in mechanically holding viscera out of the pelvis but in bringing comfort to the patients.

The rubber pads recommended here are used during laparotomies in exactly the same manner as gauze pads. It will be found that with the use of rubber pads the intestines are kept out of the pelvis much more readily than with gauze pads. There is more body to a rubber pad and loops of intestines falling against a rubber surface meet a greater resistance than with gauze pads and furthermore, the intestinal loops can be manipulated to a better advantage and are more under control than in trying to keep them out of the pelvis by means of gauze. One rubber pad properly placed will hold the intestines out of the pelvis much better than a half a dozen gauze pads. It seems to me that heat dissipation is lessened with rubber pads therefore the abdominal contents are kept warmer than when gauze pads are used. Intestinal peristalsis is less interfered with as is the case with gauze pads and when the operation is finished the surface epithelium looks fresh and glistening. As the rubber pads have no power of absorption, no dehydration of surface epithelium can possibly occur.

The patient is put in the Trendelenburg position before the abdomen is opened. This allows the intestines to gravitate out of the pelvis. When the abdomen is opened, the self-retaining abdominal retractor is now placed in position. The assistant hooks up the upper angle of the abdominal incision with one finger so as to pull away the abdominal parieties from the intestines. This procedure allows the further gravitation of the intestinal loops toward the diaphragm. The rubber pad is now ready to be inserted into the abdominal cavity. First one side of the pad is inserted and then the other. The rubber pad should cover the loops of the intestines and should have no wrinkles in it. The loops of gut are now easily lifted over the promontory of the sacrum and tucked in under the rubber pad. A very good pelvic exposure can thus be obtained. In some cases several rubber pads may be used. In stout patients and in those cases where the intestines are distended, gauze pads may have to be used over the rubber pads to prevent them from slipping down and interfering with pelvic exposure. The cecum on the right

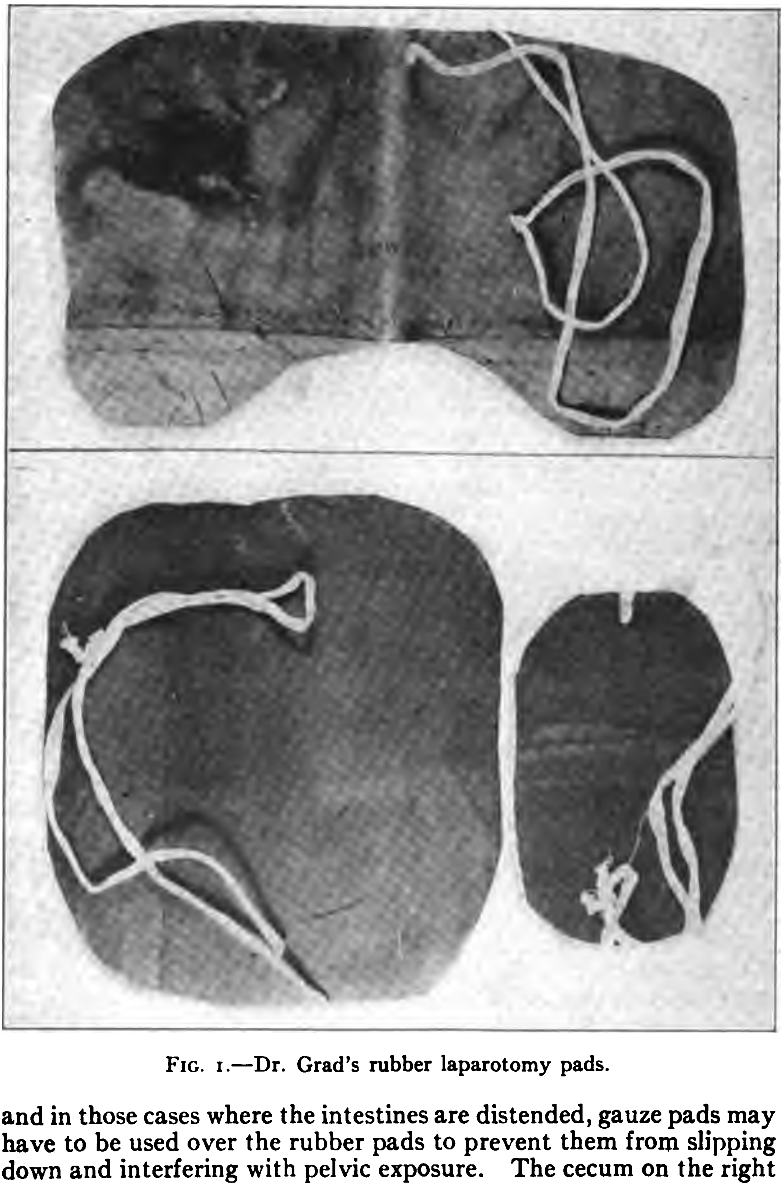

FIG. 1.—Dr. Grad's rubber laparotomy pads.

and the sigmoid on the left are the organs that are most difficult to keep out of the pelvis during operation. With the use of the rubber pad these organs are easily kept out. The rubber pad should thoroughly cover these organs and if they are not kept tucked away, a gauze pad is placed over the rubber sheet for counter pressure, the pressure being exerted by the gauze tucked under the abdominal flange of the retractor. No matter how large or redundant the sigmoid may be, the rubber pad will keep it out of the field of operation. To cover the rectum small rubber pads may be used, and should it be necessary to use gauze for the purpose of absorbing pus or other pathologic fluids, they are placed wherever they are needed, but the peritoneum is always protected by a rubber pad.

A certain amount of parietal peritoneal surface must of necessity become traumatized in every pelvic operation. This circumstance is to me of little moment as long as the surface epithelium of the intestinal loops have been protected during the operation and dehydration prevented. While I have no definite data to prove my contention, it seems to me that evaporation and heat dissipation occur to a less degree when rubber pads are used. It is a noteworthy fact that heat dissipation is very rapid in a gauze pad. When a rubber pad covers snugly all intestinal loops, it not only protects them from trauma but the pad forms a roof over them and keeps them warm.

The rubber pads shown here have been used for the past two years (Fig. 1). They have been used in pelvic surgery as well as in operations in the upper abdomen. They keep the stomach and the intestines out of the field of operation in all gall-bladder surgery. In a stout patient with massive omentum a rubber pad placed over it and smoothed out will hold the parts out of the field of operation in the most satisfactory manner. In the repair of postoperative hernias particularly in stout patients, the use of these rubber pads has proven of the utmost value to the operator. Not alone during operation but when the abdomen is to be closed, a small rubber pad will hold the abdominal contents out of the incision in a very thorough manner allowing the operator to close the incision unhampered, with precision and rapidity.

I have three pads of different sizes. Experience has shown that a pad of a semilunar shape will prove more practical than a smaller pad. Rubber pads cut in squares about 7 inches in diameter are very handy in certain places in the abdomen. A surgeon can vary the sizes and shapes of these pads to suit his own purpose. Personally I find that one large pad placed in the manner described will meet all indications. After the pads are removed from the abdomen they are washed and dried. It will be found that these pads will last indefinitely. They stand boiling very well and there appears to be very little wear and tear. The strings used in these pads have given some concern and I have not solved entirely the problem about them. The tapes get soiled very quickly and it is troublesome to replace them constantly. To obviate this I have tried to use silver chains but found them impractical as they get tangled up with the instruments during boiling. I am now trying to get some other material which will not rust or get soiled so easily.

When I first began to use these pads I soon noticed that when the pads were removed at the end of the operation, not alone did the peritoneum on the loops of gut remain glistening, but that they were bathed in a small amount of fluid. I thought at first that this fluid collected from the moisture in the gauze pads that were also used, but I found then that this same moisture was found when no gauze was used, and pathologic fluids were in the pelvic cavity to account for it. I therefore came to a conclusion that this small amount of moisture must be the result of a transudation that occurs in every case where the abdomen is opened. Under ordinary condition when gauze pads are used, this transudate is absorbed by the gauze pad and has escaped observation. It seems to me further that this small amount of fluid in which the loops of intestine float under the rubber cover is beneficial rather than detrimental to the delicate epithelial surface.

When I first began to use rubber instead of gauze pads, I tried various rubber sheeting on the market, but I found that a suitable thickness was very difficult to obtain. They were either too thin or too thick. Quite by accident I found that medium sized rubber tubes used in automobiles are made of rubber sheeting which is most suitable for laparotomy pads. Any discarded rubber automobile inner tube will serve the purpose very well. The tube is opened up and a rubber sheeting will be obtained which can be cut into suitable sizes and the pads exhibited here are made from such material. These pads will last indefinitely, they are very economical and are certainly very efficient. Some of these automobile inner tubes have one side rough and the other smooth. While it is more desirable to have these pads both sides smooth, I have not found the rough side of any particular disadvantage because even the rough side will not damage the surface epithelium.

DISCUSSION.

Dr. L. W. Strong.—I should think that fine rubber tubing threaded with silk thread would make a very satisfactory string.

Dr. Dougal Bissell.—About two years ago I presented before this Society a rubber envelope pad, and I am delighted to know that other members of the Society are now recognizing the disadvantages of the gauze pad used in abdominal work and the damage done by it to the peritoneum. I am satisfied that no one can use a nonirritating material like rubber, without appreciating immediately its many advantages. I wrote an article on this subject during the past year, which brought out many of the points mentioned by Dr. Grad. I made certain deductions then which have been substantiated by experience. I refer particularly to the minimum amount of postoperative vomiting and distention following the use of the rubber pads. I would like to ask Dr. Grad, as a matter of interest, the exact date when he first used his pads. I am a little surprised and somewhat disappointed that no reference has been made in his article to the work I have done and am doing, and to my publications along this line.

Dr. Hermann Grad.—Dr. Bissell is the pioneer in the matter of rubber pads. His rubber envelopes for gauze pads are on record some two years. I do not know just how long these pads shown here have been used, but it is more than two years.

Dr. H. J. W. Morganthaler (by invitation) gave a demonstration of

THE BROOKLYN NURSERY IDENTIFICATION NECKLACE.

(See original article in August number, 1919, page 186.)

DISCUSSION.

Dr. R. H. Pomeroy.—The minor problems of proper care for individual babies in a large nursery are almost unlimited, but the matter of identification has certainly always been a major problem. I personally have worried over the subject for twenty years and I am very glad to claim with Dr. Morgenthaler's permission that the idea of a lettered bead name-necklace occurred to me about two years ago. I found that there were no lettered beads on the market as far as I could discover, and it was only a little over a year ago that I delegated to Dr. Morgenthaler, one of my assistants at the Brooklyn Hospital, the general problem of reviewing the methods in use for identification of babies in nurseries in this vicinity and then trying to work up the details of a nursery name-necklace. I have had the opportunity, in conjunction with Dr. Morgenthaler, of checking up the various steps in the development of this plan. These beads are at present made to order and lettered by hand. It will take an original investment of some two thousand dollars, I understand, to make up dies so that they can be manufactured wholesale.

In answer to a question as to the cost of the present equipment as demonstrated, Dr. Pomeroy said it was two hunderd dollars. We had 840 nursery babies last year. We expect about 1000 cases this year.

In answer to a question as to what the present equipment consisted of, the doctor said it contained about 15,000 blue beads an about 250 lettered beads. The cost of the necklaces would be about fifty cents.

The original intention was to have blue necklaces for the male babies and pink for the female babies, but it was found that the blue beads could be seen better and for this reason they use blue beads for both male and female babies.

There are a number of minor points in the arrangement of the knots. The knots are so arranged that it is possible with a single cut to remove the necklace and at the same time not lose any of the beads.

Replying to a question as to whether they send the babies out from the hosiptal with the beads on, the doctor said: We do not send the babies out with the beads on, although we would like to do so, because we have as yet no wholesale manufacturer of the lettered beads, and for this reason we cannot afford to lose the beads that we have, and if we did send them out with the necklaces on we would be compelled to charge forty or fifty cents for each necklace.

Dr. O. P. Humpstone.—"I would like to say a word in commendation of this scheme devised by Dr. Morgenthaler and Dr. Pomeroy.

"Dr. Morgenthaler presented this question before us in Brooklyn and we had a free discussion about it. We were rather inclined to think that the use of a little silver chain around the neck was probably the best scheme at that time. Since that time, however, I have found that in the institution where this arrangement of the silver chain has been in vogue (and where they were wealthy enough to supply little silver chains for the babies), it has been found necessary to attach little round pads to these chains. They have had to pin these pads to the babies' vests, with the result that they have had some cases of marked irritation of the neck from the chain.

"I have had the opportunity of seeing these beads used on some of my patients and there has been no irritation whatever from them.

"I think the doctor has solved the problem of the identification of babies in private hospitals."

Dr. H. J. W. Morgenthaler.—"I have nothing to add except to say that the patients think we have the finest nursery in the world because we put blue beads around the babies' necks. There has been none of the irritation which you get with metal necklaces. The mothers are immensely pleased with the necklaces and don't want us to take them off.

Dr. Eliot Bishop reported a case of

UNUSUAL PELVIC TUMOR, WITH X-RAY FINDINGS.

The use of the *x*-ray in pelvic diagnosis is so rare that I will present this case history and the *x*-ray plate and then show the specimen, the order that they came to my attention.

This fifty-year-old married woman was referred with a diagnosis of a pelvic tumor, and her chief complaint was a dull pain in her lower pelvis and back, especially when sitting down, aggravated by the attempt to rise. The duration was a year, but much worse for the last six months. She had had seven spontaneous labors and three miscarriages all of the latter before her labors, the last child being fourteen years old.

Eight years ago, she had another miscarriage, and she was in bed at that time for three or four weeks and said that she had fever. The rest of her history is negative. She had had her menopause a year and a half ago.

When she presented herself for examination, she said that she had had a picture of her pelvis and that it showed what the Röntgenologist called a "tumor of the womb."

Her local examination showed a moderately relaxed pelvic floor, a uterus in fair position, and a nodular mass in the left fornix that I thought was a fibromyomatous mass attached to the uterus, and for that reason advised operation.

On her admission to the Brooklyn Hospital she brought the x-ray plate and then we considered revising our diagnosis. I will now present this specimen removed by laparotomy, which I presume you will agree with me is a relic of her supposed miscarriage, eight years ago.

The diagnosis from the Pathological Department was: old tubal pregnancy (partially mummified fetus).

BOOK REVIEWS.

INTERNATIONAL MEDICAL ANNUAL. A Year Book of Treatment and Practitioner's Index. Pp. 519. Thirty-seventh Year, William Wood and Company, New York, 1919.

The volume for this year naturally deals largely with problems of military surgery. Among the articles of interest to the gynecologist and abdominal surgeon are those on radium and x-ray therapy chiefly in cases of fibroids, carcinoma and various hemorrhagic conditions; the surgery of the abdomen, in which the advantages of anterior and posterior drainage are discussed; cancer of the breast, in which total removal of both pectoral muscles is advocated; surgery of the intestines, including tuberculosis, interssusception, obstruction, giant duodenum, Meckel's diverticulum, and ceco-plication for cecal dilatation and pain when not relieved by appendectomy. Conservation of the sound ovary is favored and hematomata of the ovary are discussed. Under the heading, disorders of the vagina, marked restriction of the use of the douche is advocated. Another subject which is considered is the substitution of the anal for the vesical sphincter in certain inoperable cases of vesicovaginal fistula. Obstetrical articles include a consideration of fever at the time of labor; puerperal infection treated by intravenous injections of arsenobenzol; and pyelitis during pregnancy, in which treatment by prolonged alkalinization of the urine is favored.

PLASTIC SURGERY. Its Principles and Practice. By John Stage Davis, Ph. B., M. D., F. A. C. S., Instructor in Clinical Surgery, Johns Hopkins University; Assistant Visiting Surgeon, Johns Hopkins Hospital, etc. Pp. 770, with 864 illustrations containing 1637 figures. P. Blakiston's Son & Co., Philadelphia, 1919.

Although plastic surgery was practised in ancient India and Egypt and was revived in Europe in the fifteenth century, and although Szymanowski's Manual of Operative Surgery, published in 1867, contained unsurpassed descriptions of plastic surgical procedures, the present volume is the pioneer American work devoted exclusively to plastic surgery. The plastic surgery of the recent war was arbitrarily limited, the author states, by regulation, to maxillofacial reconstruction. In civil life plastic surgery of the trunk and extremities is equally important. The writer has recorded in this volume his personal experience acquired by over ten years of intensive work in this line, and has collected from scattered sources the methods which he has found useful. Beginning with a general consideration of plastic procedures and prosthesis, he takes up transplantation of skin and of other tissues and pedunculated flaps. An interesting chapter is that on treatment of wounds. This is followed by discussion of intractable ulcers and varicose veins, scars and keloids. The chapter on malformations in general precedes those on harelip and cleft palate, exstrophy of the bladder, hypospadias, and atresia of the vagina. A large part of the volume is devoted to plastic surgery of various portions of the face and ears and the remainder to that of the neck, trunk and extremities.

Symptoms of Visceral Disease. A Study of the Vegetative Nervous System in Its Relationship to Clinical Medicine. By Francis Marion Pottenger, A. M., M. D., LL. D., F. A. C. P., Professor of Diseases of the Chest, University of Southern California, etc. Pp. 328. With 86 text illustrations and 9 color plates. C. V. Mosby Company, St. Louis, 1919.

"There is a patient who has the disease, as well as the disease which has the patient." This is the basis upon which the volume is based. In it the writer attempts to interpret, in terms of visceral neurology, symptoms which are observed in cases of visceral disease; to show how pathologic changes in one organ affect other organs and the organism as a whole, through the medium of the visceral nerves. He takes up first the relationship between the vegetative nervous system and the symptoms of visceral disease, then the innervation of important viscera with a clinical study of the more common viscerogenic reflexes, and finally discusses briefly the vegetative nervous system. He says that an understanding of the vegetative nervous system and the activities of the endocrine glands will explain most of the physical acts connected with visceral function and furnish the bridge between the pathologic changes in tissues and the expression of the disease in altered organic function. In the case of the urogenital tract he discusses the reflexes, chiefly sensory, showing the location of pain in diseases of these organs and the nerve paths by which it is conveyed.

Geriatrics. A Treatise on Senile Conditions, Diseases of Advanced Life, and Care of the Aged. By Malford W. Thewlis, M. D., Associate Editor, Medical Review of Reviews. With introductions by A. Jacobi, M. D., LL. D. and I. L. Nascher, M. D., Pp. 250. C. V. Mosby Company, St. Louis, 1919.

Geriatrics, the branch of medicine dealing with old age, is based upon three fundamental principles: (1) that senility is a physiologic entity like childhood and not a pathologic state of maturity; (2) that disease in senility is a pathologic condition in a normally degenerating organ or tissue and not a disease such as we find in maturity, complicated by degenerations; (3) that the object of treatment in senility should be to restore the diseased organ or tissue to the state normal to senility. The writer first describes the anatomic changes characteristic of senility, citing many well-known instances of activity in men of advanced years, he shows that the most important secret of geriatrics is to keep the aged at work, and especially, if they are ill, to keep them out of bed, even the day after an operation. A chapter is devoted to the hygiene of advanced life and another to the human necessity for giving the aged attention, work and money. Senile mentality is discussed and its transition into senile dementia. Diet in old age is considered, also the treatment of senile constipation, to which, with the resulting toxemia, the writer ascribes many of the senile complaints. In reviewing the subject of blood pressure, he emphasizes the importance and difficulty of diagnosing the difference between normal and pathological degenerations and the need of recognizing that quite an extensive rise in pressure may be essential to well-being in the aged. Arteriosclerosis is usually a normal process of advancing years and should not be tampered with. The symptoms commonly attributed to it are generally due to renal insufficiency and are often relieved by free catharsis and restricted diet. In senile nephritis the writer favors no restriction of the patient's customary diet and habits, free catharsis, extract of pig's kidney, and occasionally electric-light baths. Senile diabetes sometimes does best with no treatment; in other cases treatment must be gradual and not vigorous. Acidosis rarely develops in the aged. Senile bronchitis and pneumonia and senile gangrene are discussed. For prostatic hypertrophy medical treatment is often efficient. Under the title of therapeutics, the author gives information as to the special effects of certain drugs upon the aged. Senile malingering is an interesting chapter. The most frequent form of malingering is exaggeration of pain to secure sympathy. Venereal diseases and sexual life in the aged are considered, also radium therapy for senile epithelioma. The final chapter on surgery of the aged closes with the admonition "Keep senile cases out of bed."

A MANUAL OF PHYSIOLOGY WITH PRACTICAL EXERCISES.—BY G. N. STEWART, M. A., D. Sc., M. D. Edin., D. P. H. Camb., Professor of Experimental Medicine, Western Reserve University; Clinical Physiologist to Lakeside Hospital, Cleveland; Professor of Physiology, Western Reserve University, etc., etc. With colored plate and 492 other illustrations. Eighth Edition. New York, William Wood & Company, 1918.

The Sixth American edition of this work which appeared in 1910 comprised 1064 pages and 450 text figures. The present edition has 1245 pages and 492 text figures. This work has now been before the public for nearly a quarter century and has for many years appeared simultaneously in Great Britain and the United States while the author has taught physiology in both countries. It must be kept in mind that during the past five years the "laboratories have been silent," as the author puts it. Nevertheless he has been able to make substantial changes, as in the chemistry of respiration, the endocrine glands and metabolism. Some of the newer calorimetric work has received attention The recent teachings of Cushny on the urine have also been incorporated. A new feature of the edition is a bibliography and this alone has increased the size of the book by sixty-three pages. The practical exercises have been retained in their present form against the suggestions of some of the author's friends. It had been suggested that this department could be expanded into a second volume. This course has been pursued by other physiologists, who have issued a laboratory guide as a companion to the theoretical volume. A large portion of the preface to the present edition is concerned with this discussion in which the author insists that the two departments of the book should be taught as heretofore, with the exercises at the end of each chapter.

TEXT-BOOK OF CHEMISTRY, INORGANIC AND ORGANIC, WITH TOXICOLOGY, FOR STUDENTS OF MEDICINE, PHARMACY, DENTISTRY AND BIOLOGY.—BY R. A. WITTHAUS, A. M., M. D. Second revised edition by R. J. E. SCOTT, M. A., B. C. L., M. D. New York, William Wood & Company, 1919.

In the revision of Dr. Witthaus's well-known work the editor's principal difficulty was to keep down the number of pages. To that end he eliminated some of the sections on Physics, it having been taken for granted that the student is in possession of works on that subject with which he is already familiar. In like manner much that would normally come under the head of physiological Chemistry has been eliminated outright because the student today is expected to own and study one or more of the special works devoted to this subject, as Abderhalden, Hammarsten and Matthews. The size of the last named volumes will illustrate the impossibility of incorporating even the bare essentials of phyisological chemistry into a manual on chemistry in the narrow sense. Further space was obtained by leaving out certain parts of Organic Chemistry, the two sections on this subject comprising the open- and closed-chain carbon compounds of the more practical kind. Toxicology has been abbreviated by placing the text in fine print. Equations are printed each on a line by itself which makes the subject clearer and more attractive. New material has been added wherever it was considered necessary and care has been taken to present and emphasize general principles rather than isolated facts. In several sections of organic chemistry the Grignard reactions have been freely introduced. Many of the new paragraphs were indicated by the late

Professor Witthaus as desirable, and in some cases they have been taken from his manuscript notes. Dr. Scott, the editor, has edited many books and in all of these we note that they are as readable as technical books can be made, and the present one is no exception

SUITES DE COUCHES NORMALES ET PATHOLOGIQUES.—PAR E. A. RENE DE COTRET, Accouchéur en chef de la Maternité (Hôpital de la Miséricorde); Professeur d'Obstétrique et de la Clinique obstétricale a la Faculté de Médecine; Membre du Conseil de la Faculté de Médecine de l'Université de Montréal; Membre de la Société d'Obstétrique et de Gynécologie de Paris. Montreal. La Cie d'Imprimirie Godin, Ltee, 1919.

This volume is an admirable monograph on the puerperium and we can only marvel that the author did not issue it simultaneously in the English language. The wealth of material is equalled by the excellence of the manner of presentation. The book abounds in statistical information which makes it of value for reference. The author has obtained his material from the most authoritative of recent writers and quotes freely from the works of Edgar, De Lee and Williams among cis-Atlantic authorities, while he also draws extensively on the French obstetricians, and cites English and Germans on due occasion. The paper covers, absence of illustrations and failure of the author to quote figures from his own clinics, might be regarded as drawbacks to the success of the book, which is European rather than American in general make-up; but these drawbacks, should they prove to be such, can be remedied in the future. The author quotes freely enough from his own experience, but this is hardly sufficient to reflect the activities of the metropolitan clinic of which he is in charge. In the preface, however, the author is most modest, stating that the book was written primarily for undergraduate students and incidentally perhaps for obstetrical nurses, and the more advanced medical man. The thoroughness and logical arrangement of the work in reality make it as already stated a reference book of the best type.

RECORD OF CURRENT LITERATURE IN OBSTETRICS, GYNECOLOGY AND ALLIED SUBJECTS.

(Titles marked * are abstracted in the current issue.)

A. OBSTETRICS.

*Corpus Luteum Extract in Vomiting of Pregnancy. J. K. Quigley, AMER. JOUR. OBST., vol. lxxx, No. 2, August, 1919.

*Indications for Medical Abortion at the Gynecological Clinic Henneberg, *Arch. mens. d'Obstet. et de Gynec.*, vol. viii, p. 20, 1919.

*Better Methods in the Immediate Attentions to the New-born. J. O. Arnold, *Penn. Med. Journ.*, 1919, xxii, 778.

* Gestational Phlebitis. Remy, *Revue Mens. de Gynec. et d'Obstet.*, vol. xiv, p. 255, 1919.

* Interstitial Pregnancy. Vaudescal, *Arch. Mens. d'Obstet. et Gynec.*, vol. viii, p. 178, 1919.

* Treatment of Extrauterine Pregnancy After the Fifth Month. A. C. Beck, *Jour. A. M. A.*, vol. lxxiii, p. 962, 1919.

* Influence of Influenza on Menstruation, Pregnancy and the Puerperium. F. Calderon, *Jour. A. M. A.*, vol. lxxiii, p. 982, 1919.

* Spontaneous Rupture of the Uterus: Abdominal Cesarean Section and Hysterectomy. C. Larosa and G. S. Martin, *Revista Medical del Uruguay*, vol. xxii, p. 615, 1919.

* Temporary Sterilization. Turenne, *Revista Medical del Uruguay*, vol. xxii, p. 645, 1919.

*The Pandemic of Influenza at the Tarnier Clinique. Pellissier, *Archives Mensuelles e'Obstetrique et de Gynecologie*, 1919, viii, 28.

*Hysterectomy of the Gravid Uterus. Lecocq, *Annales de Gynécologie et d'Obstetrique*, October, 1919, vol. xliii, No. 9.

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C. MISCELLANEOUS TOPICS.

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SELECTED ABSTRACTS.

A. OBSTETRICS.

Corpus Luteum Extract in Vomiting of Pregnancy.—J. K. Quigley (*N. Y. State Jour. Med.*, 1919, xix, 306) reports seventeen cases so treated. Of these twelve were permanently benefited; four were benefited but relapsed (insufficient dosage); one was a complete failure. The average number of doses was seven. Had the four relapsing cases been given more at the onset as a routine there would probably have been more cases permanently benefited. Preparation used: 1 c.c. ampoule containing 0.2 gm. desiccated substance of the gland.

Indications for Medical Abortion at the Gynecological Clinic, Geneva, During 1894–1918.—Henneberg of Professor Beuttner's clinic (*Archives Mensuelles d'Obstetrique et de Gynécologie*, 1919, viii, 20) sums up his analysis of this subject as follows: medical abortion is an operation frequently indicated in Geneva and rather for internal than gynecological or obstetrical indication. This well appears from the experience of the past quarter century. The affections in which intervention is practised in order of frequency and importance are as follows: pulmonary tuberculosis in the evolutionary period; various cardiopathies and especially affections of the mitral valve; so-called incoercible vomiting of pregnancy, which indication is losing some of its old time significance; various maladies ranked under alienation as epilepsy, hysteria and dementia precox; eclampsia and various severe albuminurias; certain cases of surgical tuberculosis; certain affections which depend on the state of the ovum or gestation, as acute hydramnios and severe varices; finally anything which diminishes the capacity for earning a livelihood or which endangers life.

Better Methods in the Immediate Attentions to the New-born.—J. O. Arnold's (Penn. Med. Jour., 1919, xxii 778) practice is to cleanse away all contaminating birth fluids from the face the moment the head is born, and before the eyes are open, and then to instill argyrol in 20 to 25 per cent. solution at once, and daily for the next three days, or longer if thought necessary. To cleanse the upper respiratory passages: he grasps with the left hand the feet of the child as they escape from the birth canal, inserting one or two fingers between the knees to prevent slipping, and holding the child suspended head downward, quickly inserts an aspirator, and with a few draws, effectually clears the upper air passages before the child takes its first gasp. This is the quickest, easiest, and least harmful method of clearing the birth fluids from the child's nose, mouth and throat. In his ward service at the Samaritan Hospital it has been routine practice to paint the umbilical region with 3 per cent. tincture of iodin, and when pulsation ceases, to clamp the cord as close as possible to the skin margin with a small hemostat. The cord is then cut on the hemostat which is left in place until the child is bathed about half an hour or more later. The nurse then removes the clamp, repaints the umbilicus with iodin, and applies a simple gauze dressing. Iodin is applied once a day for the next two or three days, and the umbilicus is otherwise ignored in the daily bath of the child. The small bit of cord-stump atrophies in a day or two, the umbilical ring retracts and closes quickly, and thus greatly lessens the danger of infection, of hernia, and of hemorrhage. In own private work, he uses a ligature, but places it in the natural groove between the skin and Wharton's jelly, so that it amounts practically to a ligation of the vessels and not to the usual tying of the cord. The stump is trimmed down to the smallest possible amount, and this and the surrounding skin is painted with tincture of iodin, and covered with a sterile gauze. The after-care is the same as when no ligature is used, and the results are almost equally as good. He has had no hemorrhages or hernias, and fewer cases of jaundice or other manifestations of infection than with any other method of treatment of the cord.

Gestational Phlebitis.—Remy (*Revue mensuelle de gynécologie et d'obstetrique*, 1919, xiv, 255) relates the case of a woman pregnant for the fifth time. In the early months one ankle swelled and the medical man who feared a phlebitis immobilized the patient. A month later the region was found normal but the thigh showed suspicion of phlebitis of the saphenous vein. The attendant being alarmed suggested a therapeutic abortion and the author was called in for an opinion. He suggested a course of treatment and the symptoms disappeared. The alarm in this case seems to have been due to the fact that the woman had gone through an attack of milk leg in an earlier confinement, although it gave her no trouble of a serious character. She had had no recurrence in her subsequent labors. The first, third and fourth confinements were without suggestion of phlebitis before or after labor. The suggestion of phlebitis in the fifth gestation naturally suggested the earlier experience of the second puerperium. The author had seen a similar case with a history of phlebitis during the fourth pregnancy, the nature of which was unknown to him. The fifth pregnancy went through without accident but during the sixth gestation there was a local phlebitis and it was recognized that a fatal embolus might be detached from the clot. In the original case the diagnosis of phlebitis had not been really made but the possibility was feared. Phlebitis even in varicose veins is rare in the gravida. The saphenous vein might be thickened as a result of gravidity and might be tender or painful without the development of true phlebitis. But suppose the case to be really a phlebitis should gestation be interrupted? Three months' pregnancy is an unfavorable period and the outcome might be complicated so that nothing would then be gained and the author has every reason to believe that rest in bed with antiphlogistic measures is sufficient for such cases.

Interstitial Pregnancy.—Vaudescal (*Archives mensuelles d'obstetrique et de gynécologie*, 1919, viii, 178) relates the following case: age of woman thirty-five, entered the clinic August 18, 1917; last period March 2, health was good until June 12 when she felt a violent pain which began in the hypogastric region and became generalized; with the abdomen hard and prominent. She was placed in bed with ice applications and as the pain diminished a discharge appeared, at first chestnut-colored but later more and more red until the blood was in a pure state. Her history was good throughout and she had practically never had an illness. Examination revealed in the lower abdomen a mass of the size of a fetal head, regular, smooth and dull on percussion. To the touch the cervix was displaced backward, and to the right there seemed to be the displaced fundus. These positions were due to crowding to the left by a tumor, which was spherical, resistant and of regular contour. There was no clean separation between the tumor and uterus. Auscultation gave no fetal heart sounds. Diagnosis, gestation in the left horn of the uterus. Laparotomy showed adhesions between the tumor and small intestines which were readily dissociated. The right tube, filled with bloody fluid, ruptured during the maneuvers. The enlarged uterus was seen to be continuous with the tumor. The uterus was extirpated and the left tube and its ovary, which were lying in the pelvis, were freed and allowed to remain. There was no evidence in this case of an intrauterine decidua formation and the author has in fact never encountered one in ectopic pregnancy. While he speaks of gestation in the left horn it does not appear that the uterus was originally of the bicornate type and throughout the author mentions only interstitial pregnancy. Two other cases are reported in brief.

Treatment of Extrauterine Pregnancy after the Fifth Month.—A. C. Beck (*Jour. A. M. A.*, 1919, lxxiii, 962) has made a statistical analysis of the results in a series of 262 cases collected from the literature of 1809 to 1919 and from replies to a questionnaire sent to over 200 obstetricians. He states that the actual operative risk is less during the last month than at any other time. There is very little added risk in delaying the operation until the thirty-eighth week if the patient is kept under observation. Interference at the thirty-eighth week offers the best opportunity for the survival of the child. Preliminary preparation for the treatment of hemorrhage should precede operation. Before attacking the placenta, a careful exploration should be made to determine the proper procedure to be employed. Removal of the placenta gives the best results. The conditions which favor removal of the placenta are: (*a*) Its attachment by a pedicle which can be ligated. (*b*) Easy exposure of the ovarian and uterine extremities of its blood supply. (*c*) Easy exposure of the ovarian extremity of its blood supply on the side involved, and sufficient accessibility of the uterus to permit of hysterectomy from the opposite side, thus effecting a ligation of the uterine end of the placental supply. Preliminary ligation of the vessels supplying the placental site should precede all attempts at removal. When preliminary control of these vessels is impossible, the placenta should be left in the abdomen. Closure of the abdomen without drainage is indicated when hemorrhage and infection are absent, even though the placenta is not removed. The retained placenta will ultimately be absorbed. A slight danger of secondary hemorrhage exists, and infection from the adjacent intestines may occasionally occur before absorption is complete. These complications will necessitate a second operation. If suppuration takes place, drainage may be obtained through the vagina. Marsupialization should be limited to those cases in which the removal of the placenta is contraindicated and the presence of infection requires drainage, or in which hemorrhage necessitates the use of a tampon. The continuous use of drainage invites infection in these cases, as is shown by the results obtained when this procedure was the one of choice.

Influence of Influenza on Menstruation, Pregnancy and the Puerperium.—During an epidemic of influenza in the Philippine Islands in 1918. F. Calderon (*Jour. A. M. A.*, 1919, lxxiii, 982) observed thirty-six cases of this disease in the obstetrical department of the Philippine General Hospital. In nine cases it was acquired during the puerperium. In every one of the twenty-seven in which it occurred during pregnancy the latter was interrupted; even in seven cases in which there was no bronchopneumonia or labor pneumonia. The selective action of the influenza toxin on the uterus was also shown by the early appearance of menstruation. Lobar pneumonia complicating influenza was responsible for the high mortality of this ordinarily benign disease in pregnancy. Bronchopneumonia produced by influenza caused 100 per cent. mortality when it occurred in the course of the puerperium. Influenza caused a deleterious effect on the product of conception. There being among the offspring of the twenty-seven pregnant women one case of hyperpyrexia in a newborn baby and seven deaths.

Spontaneous Rupture of the Uterus: Abdominal Cesarean Section and Hysterectomy.—Curbelo Larosa and Garcia San Martin (*Revista Medical del Uruguay*, 1919, xxii, 615) relate the following case. A woman had been brought to the Maternity Hospital at Montevideo in labor with prolapse of the right hand. She had been in labor since the previous day, the waters having ruptured. The uterus had contracted down upon the fetus in an ovoid form and the protruding hand was livid. The fetal heart sounds were weak and slow. The presentation was of the right shoulder, dorsoposterior. The woman was anesthetized before attempting any maneuvers. One of the authors was about beginning internal version when the uterus spontaneously ruptured. The tear was a longitudinal one and both borders were tense. No coils of intestine could be felt. The diagnosis was incomplete rupture from dystocia. The course of procedure lay between embryotomy and vaginal repair of the uterus and Cesarean section with or without hysterectomy. The woman was a nullipara and the vaginal intervention would therefore be doubly difficult while laparotomy was in nearly all respects the better course. The patient was already anesthetized and no additional anesthetic was thought advisable. However as the effect wore off the uterine contractions were resumed threatening total rupture. The ether was at once resumed and the uterus rapidly exteriorized. It was still contracted upon the fetus and there was a large subperitoneal hematoma and another between the laminæ of the broad ligament. The uterus was incised and the dead fetus extracted. Subtotal hysterectomy was elected because of its relative simplicity.

Temporary Sterilization.—Turenne (*Revista Medical dcl Uruguay*, 1919, xxii, 645) relates a personal case in the course of a short article on this subject. The patient who had had four labors which were progressively more and more burdensome, had developed a pyelonephritis during her reproductive activities which had recurred with her last two or three gestations. In 1916 she began to suffer from metrorrhagias imputed to a retrodeviation which was but slightly reducible, and for this she tried a pessary, which however could not long be tolerated. She accepted the alternative of an operation, and as the risk of another pregnancy would have been great it was proposed to sterilize her. The operation was performed according to a technic already tested in three cases, as follows: Anesthesia with ether, morphine and kelene; Trendelenburg position; small Pfannenstiel incision; microcysts in the ovary treated and small adhesions liberated. The operation proper, which seems never to have been done save by the author, was based on some experimental work by Taddei in 1908–9 on peritoneal inclusion of the ovary, whereby its germinal epithelum was temporarily enclosed in the serosa. The author elected to bury the fimbriated end of the tube between the folds of the broad ligament, so that the circulation of the ovary would not be interfered with nor its endocrinic function disturbed An incision was made in the anterior fold about ¾ or ⅘ of an inch long and a recess prepared in the intraligamentous space to receive the pavillion of the tube which was then sutured in. The restorative operation would be a salpingostomy and fixation operation which would place the new mouth of the tube face to face with the ovary.

The Pandemic of Influenza at the Tarnier Clinique.—During the course of the pandemic for the entire period, 1918–9, Pellissier kept careful records of maternal morbidity and maternal and fetal mortality (*archives mensuelles d'obstetrique et de gynecologie*, 1919, viii, 28). From a host of data he draws the following conclusions: the type of grippe in the gravida has been almost exclusively pulmonary, this also applying to cases in the puerperium. The malignity of the disease type is shown by the death rate of 22 per cent. the actual number of deaths in the clinic having been sixteen for the seventy-five maternal victms. Labor in a grippe patient aggravates the course of the malady, especially at the onset of the infection. The aggravation is manifested in different ways upon the lungs, heart and the phenomena of intoxication. Genital infection did not seem to be a common manifestation in these cases and the secretion of milk was not prejudiced. There was no apparent frequency of hemorrhages incidental to gestation and delivery. Progress of labor and delivery went on about as usual. There was not much increase in the use of instruments save that in impending asphyxia forceps was applied. There were three cases of abortion in fifteen chances and twenty-one of premature delivery in twenty-seven—the inference is that in all other cases gestation went to the viable period. There were twenty-seven premature births and eleven stillbirths, including deaths following delivery. Of twenty infants born at term five perished. There was also child mortality in the first six months of life—three cases.

Hysterectomy of the Gravid Uterus.—Lecocq (*Annales de gynécologie et d'obstetrique*, October, 1919, vol. xliii, no. 9) mentions this resource as superior under certain circumstances to Cesarean section followed by hysterectomy and to Porro's operation. He reports five personal cases. In order to grasp his viewpoint one of these is given in detail as follows: Patient aged thirty-nine, multipara. She undergone a laparotomy, but nothing was learned of the indication had or results. She became pregnant for the last time in 1910 and in September, when near term, was admitted for losses of blood and albuminuria. The latter improved under milk regimen and dechloruration and the blood losses became less, returning in force a month later when labor set in. Uterine contractions were not strong and blood was escaping in increasing amounts. Fetal heart sounds good. The diagnosis of placenta previa had been evident and the author failed to detach the placenta from the internal os, it being everywhere adherent. This fact prevented the design of rupturing the membranes. Meanwhile the patient was nearly exsanguinated and almost pulseless. She was at once placed on the table and given a few whiffs of chloroform, the abdomen opened and the uterus taken out after ligation of all of its attachments. The excised uterus was now incised and the child gave a cry. The entire intervention did not consume over sixty seconds. The child survived and the mother made a good recovery. The second patient of the author had an epithelioma of the cervix, the third a contracted pelvis in which the usual procedure would have been a classical Cesarean section, the fourth a placenta previa and the fifth the same. The indications for the intervention are infected uterus, fibromatous or cancerous uterus threatened rupture of uterus, complete inertia, placenta previa with much loss of blood and osteomalacia.

Double Uterus: Pregnancy in One Half, Hematometra in the Other Half.—Esquerdo (*Revista Espanola de Medicina y Cirugia*, October, 1919, vol. ii, no. 16) relates the case of a woman who complained of pains in the right side of the abdomen during menstruation. She became pregnant and three days before labor felt severe pains in the lower abdomen and left leg, these pains continuing after delivery. One month later the author examined her and found a tumor the size of an orange in the right iliac fossa which pushed the uterus to the left and toward the surface. A tumor was palpable through the vagina which was continuous with the mass in the fossa. The latter was soft but did not fluctuate and when punctured through the vagina gave exit to some black and viscous blood. After admission the patient complained of the severe pains above mentioned and of metrorrhagia and vomiting and quick pulse. The general state also demanded immediate intervention. The diagnosis was sarcoma of the organ of Rosenmüller but laparotomy showed the presence of double uterus with hematometra in the right side. Both ovaries were in cystic degeneration and both tubes atrophic. The left uterus and adnexa were first isolated as far as the vagina and the latter was divided low down to detach the tumor. Behind the latter was an extrauterine mass which proved to be the remains of Rosenmüller's organ and which was also extirpated. The woman made a good recovery. The author recalls other cases of double uterus with hematometra. If in these cases the diagnosis can be made before the belly is opened it is possible to open a communication between the blind uterus and the vagina. While it is not mentioned in the summary it is apparent that the original communication between the right uterus and vagina had been obstructed by the gravid left uterus. The woman was twenty-two years old and had begun to menstruate when only eleven. She had had no serious menstrual disturbance before pregnancy but had always complained of some distress in the lower abdomen with the periods.

Prolonged Placental Retention.—Lecène and Promsy (*Annales de gynécologie et d'obstetrique*, 1919, vol. xliii, No. 9) reach the following conclusions: it is not to be doubted that prolonged retention does occur and in the authors' opinion these so-called benign tumors are really only placental residues. That these "placentomas" can be transformed into chorio-epithelioma is quite probable, but it has never been shown beyond question. So-called placental polyp is not a benign neoplasm for it does not proliferate from its own elements with crowding back of surrounding tissues. It is better to regard it as a graft which has "taken" and survived. Apparent growth of these masses means only an increase in the amount of clot with organization. One may in fact liken it to a thrombus. In certain cases these residues do not in any way make their presence known until after a long period of latency. The initial abortion may even have escaped observation. The presence of the so-called tumor leads to mistaken diagnoses, for the symptom-picture is variable enough. Especially it is often superposed on some other and common condition—a fibroid or cancer. When examining a woman, great care must be taken to make sure of a possible overlooked conception. To this end if any doubt is raised the cervix should be dilated with a large laminaria tent and the curette used for exploration and biopsy. The curette is also the treatment.

"Twilight Sleep" in General Practice.—G. H. Winch (*Lancet*, 1919, cxcvii, 563) holds that "Twilight sleep" is of great value in obstetric practice, provided that it is administered in strict accordance with the technique laid down by Gauss of Freiburg. He reports the results obtained by himself in 435 cases in private practice. He found it necessary to note the condition of the bladder and to catheterize when required, for practically none of the patients expressed a desire to urinate. The first stage of labor in these cases was nearly always definitely shortened as compared with non-twilight cases, especially in primiparæ. On the other hand, the second stage of labor was nearly always prolonged; most of the delay occurring after the head had reached the perineum. Owing to the gradual dilatation of the vaginal outlet, lacerations of the perineum were distinctly fewer than in non-twilight cases. With regard to those cases, terminated by injection of pituitary extract, it was distinctly observed that pituitary extract had not the same powerful effect in causing uterine contractions in these cases that it has in non-twilight cases. No bad effects on the fetal heart sounds were noted. Some of the patients exhibited a certain amount of restlessness and slight delirium, but not of sufficient account to interrupt the administration. A tonic postpartum hemorrhage only occurred in 3.03 per cent. In all three the bleeding was controlled and good recoveries ensued. These cases were all multiparæ, the average number of injections per case being three.

Fetal and Maternal Athyrosis.—G. E. Smith (*Endocrinology*, 1919, iii, 262) says that the occurrence of disorders of the teeth, nails and hair during pregnancy indicates that there is a very wide occurrence of a more or less severe form of maternal athyrosis. The increase of the proteolytic enzymes in the blood of the pregnant woman tends to produce a condition similar to that under which fetal and maternal athyrosis is produced among domestic animals—not an abnormal condition, but still one that requires an abundant supply of iodine. Lack of function of the thyroid is a probable cause of albuminuria and toxemia of pregnancy which may be overcome by an abundant supply of iodine. A milk diet for the elimination of toxemia of pregnancy will probably be very disastrous to the fetus unless it be supplemented with an abundant supply of iodine. When either of the parents is suffering from a disturbance of the thyroid it is imperative that the ordinary diet should be supplemented with an abundant supply of iodine throughout the gestation period and possibly also when they are suffering from a disturbance of the parathyroids. To insure the normal function of the thyroid the ordinary diet should be supplemented with one-half to one grain of iodine approximately daily during pregnancy and menstruation and for a period of seven days each month during puberty, especially during the first three months of the year.

Functions of the Internal Secretion of the Placenta.—Studying the literature and his own series of experiments, F. S. Hammett (*Endocrinology*, 1919, iii, 307) says that the evidence now available concerning the function of the internal secretion of the placenta eliminates the probability of the participation of such a substance in the production of eclampsia, in the hyperplasia of the mammary glands during pregnancy, or in the secretory function of the mammary glands from a quantity point of view. The feeding of desiccated placenta to nursing mothers does affect slightly the chemical composition of the milk produced, but not significantly. It is, however, certain that there is in the placenta a substance which, when fed to nursing mothers, is passed on in the milk to the infants and acts as a stimulus to growth and it is this and this alone that permits the designation of the placenta as an endocrine gland.

B. GYNECOLOGY

Radium in Gynecology—Rouffart (*Revue mensuelle de gynécologie et d'obstetrique*, 1919, xiv, 241) relates a number of cases in which radium was employed with uncertain results. One case of cancer in a fibroid uterus had survived over five years but the floor of the bladder had sphacelated and the patient refused an operation, getting along by wearing a urinal. This is the only case known to the author of a similar accident from the use of radium. The fibroid was a submucous polypus with a long history of metrorrhagia in a patient only twenty-seven years old. The cavity of the cervix was found to be the seat of a cancer. The diagnosis was placed beyond doubt by a biopsy. Twelve centigrams of radium were placed directly within the cavum uteri and left for twenty-four hours. The treatment was repeated but once. Both general and local conditions improved and the hemorrhage from the uterus definitely ceased. The menses had not returned. The uterus seemed to have become quite normal save that it bled readily from contact. The case was quite operable and a hysterectomy was performed. The lesion of the bladder was not due to the operation but as already stated was imputed to the radium. In a second case of a cancer of the cervix with fixation of the uterus a supravaginal amputation was first performed with the thermocautery and radium afterward applied. During two and one-half years there was no recurrence in the scar but one was evident later and radium utterly failed to check its progress. Nevertheless the length of survival is notable after what can only be called palliative measures. A similar case shows a two-year survival with sign of recurrence but the disease was recognized at a very early period. A polyp of the vagina showed a spot of cancerous degeneration and it was removed with scissors and radium applied at the base. In a fourth case radium appeared absolutely inert in an inoperable cancer of the cervix and even the pain was not relieved. The author has had two similar cases. On the other hand a patient attacked with cancerous degeneration of the cervix after subtotal hysterectomy for fibroids was still alive and well four years after knife and radium treatment.

Uterine Dyspepsia.—T. G. Moorhead (*Practitioner*, 1919, ciii, 231) records two cases which closely simulated gastric ulcer, both of which recovered promptly and completely after removal of uterine fibroids which compressed the rectum. The writer calls attention to the importance of making a pelvic examination in cases of supposed gastric ulcer that are not improving under treatment. Probably it is only fibroids which remain impacted in the pelvis, and which press upon the rectum that can cause such symptoms, for we are all acquainted with cases of huge fibroids existing along with good health and with perfect digestion.

Present Aspects of Endocrinology.—A. W. Lescohier (*Med. Rec.*, 1919, xcvi, 532) says that the influence of ovarian activity on the menstrual function has long been recognized. More recently we have come to know that other glands, especially the thyroid, the pituitary, and the mammary, may affect the development or influence the functional activities of the sex organs. The best-known application of ovarian treatment is the use of this gland in its entirety, or more often a preparation of the corpora lutea, in controlling the disturbances incident to either natural or artificial menopause. The failure in some of these cases is undoubtedly to to be attributed to the complicating glandular factors; in other words, the disturbances of the menopause, whether occurring physiologically or as the result of removal or destruction of the ovaries, are to be interpreted as a general disturbance of the endocrine balance, in which the dominating factor is subject to variation. In so far as menstruation depends upon ovarian activity, we might expect that absence or scantiness of the menses would be associated with secretory deficiency, and conversely, that excessive or difficult menstruation would be the expression of hyperfunction. This is to a considerable extent substantiated by clinical experience, but other factors may be involved, especially in menorrhagia or dysmenorrhea, conditions in which the secretory element is perhaps less important than certain other factors. The relation of ovarian activity is more frequent and positive in the disorders of the deficiency type; that is, amenorrhea or scanty and infrequent menses. This group of cases includes women who are physically underdeveloped, and whose menses, from puberty, have been irregular or scant; those in whom the menstrual function has been normal but subsequently becomes irregular or deficient, and cases of amenorrhea or scanty menstruation associated with hysterical temperament. It is not to be expected that organotherapy will be successful in controlling disturbances in cases in which an inferior nervous make-up is the dominating factor. A fact which is to be considered in the endocrine treatment of these patients is the possible necessity of utilizing some other preparation to supplement ovarian treatment. This applies especially to the pituitary and thyroid glands. Absence or scantiness of the menses, accompanied by a rapid increase in weight, polyuria, and marked carbohydrate tolerance, points strongly to a pituitary insufficiency. The efficacy of ovarian treatment in dysmenorrhea has not been well substantiated. The usefulness of such treatment is to be largely limited to the early puberal period as an agent to promote the development of the internal genitalia. Menorrhagia, in the majority of cases, is undoubtedly attributable to organic conditions, but there is a certain group associated with excessive ovarian activity. Here again ovarian or corpora lutea treatment would be distinctly contraindicated. Mammary preparations appear to be useful in these conditions. Such clinical evidence as is available indicates that the mammary gland exerts a definite effect in neutralizing ovarian hypersecretion.

Use of Radium in Fifty Cases of Uterine Hemorrhage.—For the purpose of presentation the cases have been divided by S. M. D. Clark (*Jour. A. M. A.*, 1919, lxxiii, 952) into three nominal groups. In group I are placed those cases in young women in which there is excessive bleeding, with no marked local discomfort, but a decided constitutional impairment resulting from too great a loss of blood. In many of these cases there is no discernible anatomic wrong. Curetting, organotheraphy and constitutional remedies fail. In one of five cases, by the use of small, graded amounts of radium, the flow was returned to normal. In another case, an effort to check the flow by graded doses failed, and the treatment had to be pushed on to complete cessation. Cases of violent dysmenorrhea which have resisted all treatment, and in which the general health is markedly impaired, are placed in Group II. The affection is most frequently seen in the neurotic type who are reluctantly yielding to advancing years and are as yet unmarried. Twelve such cases are reported, complete relief being obtained in all, chiefly through suppression; but in one instance the treatment relieved the pain, and normal menstruation continued. The greatest number of cases are classed as "chronic metritis." The ages of the patients are usually between thirty-six and fifty-six years. Many have had numbers of children; the uterus is in malposition, enlarged and firmer than normal, having associated therewith an enlarged chronic cervicitis. In these cases, bleeding is often rebellious; the patients may be curetted repeatedly, to no avail, and the final cure comes about through hysterectomy. To treat the condition, inflammatory diseases must be eliminated first; next, an exploratory curettage is performed in search of malignancy. Then, by the application of radium, the menstrual life is brought to a close. It seems that the nerve upheaval is less through this method than the surgical. Thirty-five such cases were treated, with one partial failure. In this case there persisted an occasional bleeding, especially after coitus, and fearing potential malignancy, the uterus was removed. There is some discomfort associated with radium intrauterine applications, as seen in malaise, nausea and general lassitude, lasting from twenty-four to thirty-six hours; but this is negligible in most cases, and its worst form is in no way comparable to the operative course. If radium had no other field of virtue than is evidenced in this group, its use is warranted.

Treatment of Myoma Uteri with Radium.—J. G. Clark (*Jour. A. M. A.*, 1919, lxxiii, 957) and his associates have observed more than 150 cases of myoma and myopathic hemorrhage treated with radium. The facts which he finds to stand out in relief are: The tumor must be uncomplicated with coincident inflammatory disease: it must be causing hemorrhage, and it should not be too large. When pain, even without coincident evidences of inflammatory disturbance, has been present, it is seldom relieved even though the tumor largely disappears; and in other instances in which there was an old salpingitis, a flare-up of a quiescent process has occurred. In two cases a subsequent operation was necessary—in one a hysterectomy and in the other a vaginal puncture of a large pelvic abscess was necessary to relieve the patient. The writer has, therefore, established a rigid rule that no patient suffering with pain lateral to the uterus is to be radiated. The rule which he generally follows is to confine this treatment to cases in which the tumors are the size of a three months' pregnancy or smaller. This policy is based on previous years of experience in the surgical treatment of myoma, which has established the great frequency of associated lesions in large tumors. One not infrequently finds in many cases a degree of anemia not accounted for by the loss of blood, and a complexion more like that of cachexia than occurs with an uncomplicated anemia; and furthermore, there is an asthenia of a toxic type which is not satisfactorily accounted for by a simple blood loss. Seldom is a malignant condition encountered, but not infrequently varying stages of degeneration of the tumors are discovered on macroscopic section marked by a grayish red or slaty discoloration of some of the tumors, indicating a partial gangrene in others liquefaction necrosis, etc. Through the absorption of these necrotic or degenerating materials, serious inroads on the patient's constitution have occurred and a rapid healthful rebound follows a hysteromyomectomy. Based on these observations, the writer cannot look with favor on the conversion of these large tumors through radiation into retrogressive tissues, which through absorption may cause toxic symptoms. For women in the menopausal years, one extrauterine application of 50 mg. of twenty-four hours' duration is made. Under gas the cervix is dilated and a simple curettage for diagnostic purposes is performed, followed by a light packing of the uterine cavity with a 5 per cent.

solution of iodin momentarily before the radium is introduced. The platinum or silver radium container is enclosed in a black rubber drainage tubing securely tied at each end. A 50 mg. tube is inserted into the fundal cavity to the top and left thus for twenty-four hours. When the cavity is 3½ inches or more in depth, the author usually uses 25 mg. arranged in the rubber tubing tandem fashion, to insure a wider radiation of the uterine wall. After the radium is withdrawn, the patient is usually kept in bed three days, as after ordinary curettage, and at the end of five days she is discharged and permitted to resume her ordinary duties. In women under forty years of age the dosage is graded largely according to their years. As a rule, if the menorrhagia is excessive we may leave the tube in place twelve hours if the patient is over thirty-five; in still younger women never more than six hours, choosing rather to make a reapplication several weeks later if the first fails. In this way the menopause will not be induced. Series in which normal menses have occurred after an interval of weeks or months, even when a twenty-four hour dosage has been applied; but as a rule the menopause is permanent.

Treatment of Uterine Cancer by Radium.—H. H. Janeway's (*Surg., Gyn. and Obst.*, 1919, xxix, 242) cases, thirty in number, have a post-therapeutic period varying from three and one-third years to six months, and comprise seventeen carcinomata of the cervix, four recurrent carcinomata of the cervix, four carcinomata of the fundus and five carcinomata of the vulva. Although he realizes that this report may be premature, he feels that the results have been so far so favorable that in conjunction with other published reports, they warrant planning for widespread distribution of radium without delay. From 8000 to 9000 women are the estimated number who die annually from carcinoma of the uterus in the United States. Of the author's seventeen carcinomata of the cervix, the post-therapeutic periods of three were three and one-third, three, and one and three-fourth years. Nine treated within the past year have undergone continuous retrogression after a single treatment. Five recurred after the first treatment and are again under treatment. Recurrence indicates an unfavorable prognosis. Of the four cases of carcinoma of the cervix with recurrence after operation, one is free from evidence of disease two years after treatment with radium; another, after one year; one died from metastases; the fourth was improved but the outcome is uncertain. Of the five cases of carcinoma of the vulva, one has remained free from evidence of disease for fifteen months; one developed a recurrence which is retrogressing after a second treatment; a third, wholly inoperable has such complete retrogression that a curve is expected; a fourth is improving; the fifth died from erysipelas, following the treatment. The writer favors a single treatment or 6000 millicuric hours. The radium should be equally divided among six tubes, and applied for twenty hours. There may be the regular Dominici tubes of 0.5 mm. silver, but are preferably of 1 mm. platinum, 2 cm. long, with a central radium, containing portion 1.25 cm. long and walls 1 mm.

thick. Three of these tubes containing 150 milligrams of radium are inserted into the cervical canal, arranged end to end in a long rubber tube for cancer of either fundus or cervix. For the latter three additional tubes are placed against the cervical ulcer. They are retained there in a mold of the cervical ulcer and vagina made of dental modeling compound. This may also be used to hold a piece of lead which will shield the bladder and rectum from the radium unless the probability of extension of the neoplasm makes it advisable to subject them also to its influence. There is some advantage in cervical cancer in the use of emanation enclosed within minute glass tubes which are embedded in the tumor mass, instead of the surface application of radium. The writer recommends the use of twenty to thirty or forty millicuries of emanation according to the size of the tumor treated, distributed as evenly as possible throughout the tumor.

Sacral Suspension of the Uterus for Relief of Pathological Mechanical Retroversion and Descensus.—J. V. D. Young (*Surg., Gyn. and Obst.*, 1919, xxix, 267) says that the uterine ligaments chiefly concerned in retroversion and descensus are the uterosacral and the round. His conception of the indicated surgery is as follows: In multiparæ, for physiological retroversion, round ligament-shortening; for pathological mechanical retroversion and descensus, sacral suspension and, if needed, round ligament shortening; when there is a conical long cervix, the tracheloplastic operation of Sturmdorf. In multiparæ, the restoration of all birth trauma; dilatation and curettage of indicated; for the hypertrophied infected lacerated cervix, the tracheloplastic operation for cystocele, the restoration of the vesicovaginal endopelvic fascia by the method of Rawls; for rectocele, the restoration of the rectovaginal endopelvic fascia, and the muscular interposition perineorrhaphy. The writer describes in detail the technic of sacral suspension, an operation which he has repeatedly advocated. He has performed 270 sacral suspensions of the uterus and ten of the cervical stump after hysterectomy, a total of 280 with a mortality of two, one from acute nephritis, the other where excessive peritoneal trauma of a previous operation produced insurmountable complications. The labors which he has attended after sacral suspension have been most satisfactory. One patient has had four and has had no gynecological symptoms, a uterus in normal position and negative adnexa.

Inflammatory Adnexopelvic Lesions of Influenza.—Cantoni (*Annali di Ostetricia e Ginecologia*, 1918,[1] xi, 117) reports several cases of this sequence. Patient aged thirty-eight, nullipara, influenza two months before, since which the two menstrual periods have been somewhat painful. The urine contained a little albumin and some casts. There was felt in the abdomen a mass the size of the first, irregular and inelastic. This was finally proved to be a right adnexitis with post-infectious pyosalpinx. The condition remained stationary for a while but later the patient felt enough improved to go home, although apparently not benefited as to objective finds.

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[1] Not published until August, 1919.

A second patient gave a similar history and in addition to vague pains had abundant leucorrhea. The uring was negative. Examination disclosed bilateral adnexitis. After eight days in the hospital patient felt able to go home, the condition having been unchanged. The third patient gave a similar history save that menorrhagia had followed influenza, with premature appearance of menses. Exploration revealed a bilateral sactosalpinx. The patient left the hospital improved in about month. Twelve cases are related together. The picture was fairly constant and also differed from that seen in adnexa inflammation from other infections. Soon after the grippe, pains of a vague character appeared often with menstrual disturbances of one kind or another and leucorrhea in some cases. When time sufficed the type of menses was seen to be changed and varied from amenorrhea and delayed and scanty menses to precocity and menorrhagia, and even metrorrhagia. The course of the annexitis was slow with but slight general reaction and resolutions seems to have been the rule at an earlier or later date. There is no mention of operative intervention or of rupture of abscesses or other untoward event.

Practical Points and Common Errors in Treatment of Sterility.—E. Reynolds (*Jour. A. M. A.*, 1919, lxxiii, 1099) divides cases of failure in diagnosis and treatment of sterility into several classes: sterilities due to mistakes in the marital relation; to neglect or failure to appreciate sterility in the male; the subjection of innocent abnormalities to unnecessary and non-productive operations, and failures to detect evident causes of sterility from lack of special training in microscopic examinations. Of the mistakes in the marital relation, decrease or lack of satisfaction during coitus is often the result of frequent amorous caressing without cohabitation. Ejaculation by the male before the female has reached the orgasm is a common cause of chronic congestion of the female organs. It can often be corrected by psychological restraint on the part of the male, or by local treatment if due to a local irritation in the male organs. Withdrawal to prevent pregnancy usually deprives the female of the orgasm and results in congestion which may interfere with pregnancy when it is desired. Marked congestion of the feminine organs may cause great desire but not terminate in orgasm, thus increasing the congestion. In these cases relief may be obtained by glycerin depletion of the vagina. Habitual excess in even normal coitus tends to congestion and, if long continued, to sterility. Psychologic causes of failure to obtain the orgasm may be dispelled by ascertaining the origin of a psychic impression of distaste for coitus and giving appropriate advice. In human sterility the male is at fault in about 50 per cent. of all cases. Congenital or conpubertal sterility is the result of arrested development of the genital organs and may be absolute or relative. If simply slightly below the normal standard the man may usually be stimulated into a fair degree of fertility. In estimating the fertilizing quality of the semen it is important to note not only the numerical frequency of the spermatozoa and the percentage of motility but also their vitality as shown by the quality of their motility and its duration. Oligospermia with deficient vitality of the spermatozoa is not infrequent in overworked men. Moderately oligospermic men with semen that shows somewhat deficient vitality may probably be capable of impregnating highly fertile women (especially women whose genital passages are in a condition highly favorable to the existence of the spermatozoa) while, at the same time, they would be infertile to women whose genitals are moderately not hostile to the spermatozoa but who would yet perhaps be not infertile to a male whose spermatozoa were abundant and of high vitality. Men who are oligospermic from constitutional cause, as well as those who are somewhat below the normal from poor development, may often be rendered fairly fertile or sometimes fully fertile by change of habit and stimulative treatment. Double gonorrheal epididymitis frequently produces absolute aspermia or at least such oligospermia that the chance of impregnation is poor even if the condition of the female genitals is not hostile to the spermatozoa. Local conditions of the male genital tract may produce a high degree of infertility by producing a urethral secretion which annuls or lessens the motility and vitality of the spermatozoa during ejaculation. An irritated condition of the seminal vesicles may produce the same result. Both may be relieved by treatment. Congestion and swelling of the prostate, often the result of excess or imperfection of the marital relation may cause the production of an excess of sticky prostatic secretion which entangles the spermatozoa. Such cases are hopeful under treatment. Many, if not most, male sterilities are curable. Sluggish action of the colon with consequent chronic retention of feces may be of itself a sufficient cause of sterility in women, apparently as a result of autointoxication. General autointoxication from distant lesions is by itself a sufficient cause for sterility. When a woman is found to have some gross and easily detectable abnormality she is often subject to an operation on the chance that it may cure sterility if it be the result of that abnormality. This should never be done without exact knowledge of the causes and conditions involved in the individual sterility. Especially prominent among these useless operations are those which are done for the relief of retroversion without recognition of one of the functional derangements of the ovaries which imply non-ovulation, or of a preëxisting anteflexion from the existence of short anterior attachments of the cervix. The performance of a suspension, whether by seroserous stitch or by shortening of the ligaments in the face of a forward fixation of the cervix, means necessarily the restoration of a flexion that decreases uterine drainage and thereby increases the conditions productive of sterility; the uterine tension so produced moreover eventually destroys even the anatomic result in a large proportion of cases. Unnecessary and unsuccessful curettings are another extremely frequent element in the empiric treatment of sterility. They very often produce trauma and scar tissue about the angle of flexion which distinctly and by itself decreases the prospect of pregnancy at any subsequent time. The use of stem pessaries is a far too frequent and very harmful expedient in the treatment of sterility. When effectively used, the stem produces improved uterine drainage; but it effects this by the production of a pressure necrosis in the portion of the canal where it lies. The few pregnancies that follow its use occur during the comparatively few months in which patency remains; before recontraction sets in. The removal of neoplasms from sterile women without attention to the real causes of the sterility naturally yields only a small percentage of results. Biochemical vaginal hostility of bacterial origin, mechanical cervical hostility from inspissated or sticky mucus, tubal hostilities without marked enlargement of the tubes, and ovaries which are nonovulating from retention of the follicles are frequent causes of sterility which seldom produce ill health or even gross lesions. The diagnosis of these conditions can be made only by the microscope. The general characteristics of this class of cases are an absence of symptoms, except sometimes dysmenorrhea, marked anteflexion of the cervix due to a congenitally short Goffe's fascia and other anterior attachments, cervix small with small os, the fundus of the uterus not large, and the intermediate portion of the organ slender. There is poor drainage from the uterus, and the cervical secretion tends to be inspissated and sticky. Except in the dysmenorrheic cases, these conditions make little trouble during maidenhood; and in those in which pregnancy occurs soon after marriage, the development of the uterus is completed during pregnancy. When pregnancy does not follow promptly after marriage, a very acid, highly bacillary, vaginal secretion usually appears, and sterility is established. At this early stage, and if repeated examinations of the ovaries show them to be thoroughly normal throughout the menstrual month, the cervical plastics alone or in combination with vaginal disinfection and autogenous vaccinations from the bacillary flora are often successful. If such sterility remains long unrelieved, functional ovarian derangement usually ensues and a conservative operation on them must be combined with the other procedures if success is to be hoped for. Minor treatment and the autogenous vaccinations are often of much importance as after-treatment. In general it may be said that in young persons without venereal history or serious congenital defects, and with a sterility of but a few years' standing, the prospect of obtaining pregnancy under treatment is almost always very good. In selected cases it is as high as from 75 to 80 per cent.; but in less favorable cases it ranges all the way downward to those in which it is from one cause or another absolutely hopeless.

Sub-total Hysterectomy.—T. Murphy's (*Med. Jour. Australia,* Sept. 6, 1919, 187) remarks are based upon a series of 200 cases in which this operation was performed. He recommends that in opening the abdomen the incision be carried right down to the symphysis. When incising the peritoneum, if the public end appears thickened and the bladder is in possible danger of being injured, the incision is often deflected at an angle to one side, so as to divide the peritoneum paravesically. The self-retaining double retractor with its handle toward the umbilicus has been found to be most generally useful. In dealing with the uterine and ovarian vessels, all are clamped before division and ligated after the tumor is removed. In using clamps on the upper part of the board ligament, the one nearest to the pelvic wall should be applied first. This blocks the conductivity of the nerves running in the broad ligament. When the broad ligament is divided between the clamps on both sides, the writer runs one blade of a blunt-pointed scissors under the peritoneum at the bottom of the incision in the broad ligament on the right side and to passes it across, immediately under the peritoneum close to the uterus to the incision in the left broad ligament, dividing the peritoneum with the scissors as it passes along. This method enables one to get into the right plane at once and saves time and possible hemorrhage. Usually there is no necessity to push the bladder downward out of the way, as is advised in text-books. One ligature only is necessary for each of the four chief vessels. It should be used as a ligature only, never for other purposes as is sometimes advised. In trying the ovarian arteries the writer uses a sharp semicircular needle, transfixes the broad ligament below the vessel, turns the point of the needle upward and transfixes the board ligament again above the vessel before tying or removing the clamp. He has never seen a case of thrombosis as a result. All raw surfaces must be carefully covered with peritoneum. The danger is not only that of formation of adhesions but that continuous exudation of lymph into the peritoneal cavity may take place while its infection from adjacent intestine is not uncommon and may easily prove fatal.

Urologic Aspects of Dermoid Cysts.—W. C. Quinby (*Jour. A. M. A.*, 1919, lxxiii, 1045) reports three cases of dermoid cyst to show the marked disturbance and involvement of the urinary tract which these tumors may cause. The first was a dermoid cyst of the vesicovaginal septum which caused ulceration of the bladder wall with profuse hematuria. The second case was one of dermoid cyst of the ovary which filled the true pelvis, communicated with the vault of the bladder, causing severe cystitis, and caused symptoms of intestinal obstruction. The third case gave rise to renal colic, probably by pressure of the ovarian cyst upon the ureter, causing hydronephrosis.

Boxing the Pelvic Compass.—Adeodato of Bahia, in a pamphlet published by the Livraria Economica of that city in 1919, suggests that the orientation of the pelvis by vaginal touch be taught the student by the analogy of boxing the compass. With the patient recumbent due North is of course the middle line of the abdomen at a point over the center of the bladder and due South the antipodal point over the sacrum. Then at due East will lie the left tube and at due West the right tube, each naturally with the parametrium. Southeast is the left ovary and Southwest the right ovary. Between Northeast and Northwest lies the bladder and also centralward the anterior aspect of the uterus. Between Southeast and Southwest or in other words between the ovaries lie the cavum Douglas and rectum. Due Northeast and due Northwest lie the two round ligaments of the uterus. As the student begins the study of vaginal exploration the terms of the compass will aid him materially in orientation of the pelvic viscera. In the center of the compass lies the portio vaginæ which serves as a landmark for locating the other structures.

Hematosalpinx from Congenital Malformation.—Fogt covers this subject in a recent Paris thesis reviewed in *Le Progrès Médical* for October 11 (vol. xlvii, page 591). The usual conception of hematosalpinx is that it is a sequela of tubal gestation but it can arise exceptionally in other ways. Some of these are as follows: congestion of the tube in fibroid tumors; apoplexy of the tube; pachysalpingitis hemorrhagica; hemorrhage into an infected tube; hemorrhage into a neoplastic tube and malformation of the uterus with resultant atresia. The latter may be as follows: (1) uterus unicornus; (2) aberrent uterine horn which represents a Müllerian duct deviated in its development. The latter is a little pocket of variable size with a wall formed in part by the broad ligament and lined with uterine mucosa, united to the uterus by a fibrous tract. A round ligament and tube are inserted into this horn. A number of cases of hematosalpinx seated in these pockets are on record. In some cases the condition is a hematosalpinx alone, while in others we have a hematometrosalpinx. The author has collected notes of seventeen cases of all kinds. The chief symptom is pain at the menses of a paroxysmal character and a tumor palpable by combined and rectal touch. Treatment is ablation, for owing to the distention of the horn an anastomosis with the uterus is hardly to be thought of.

Secondary Syphilis of the Uterus.—G. Gellhorn (*Surg. Gyn. & Obst.*, 1919, xxix, 374) reports the case of a syphilitic woman with a very recent infection, several ulcerated patches within the cervical canal constituting the only manifestations of secondary syphilis. The discovery of these lesions was made possible by an eversion of the cervical lips due to an old tear. A large number of spirochætæ pallidæ could be demonstrated in the secretion of the patches. Secondary lesions of the cervix are quite rare. They have been found upon the outside of the vaginal portion, and this is the first case on record where the lesion was located within the cervical canal.

Ligamentous Hysteropexy in Retrodeviations of the Uterus.—Adeodato of Bahia has published a small brochure on this subject (*Contribucao ao Estudo da Hysteropexia Ligamentar no Tratamento dos Retrodesvios do Utero,* Imprenso Official do Estado, Bahia, 1919), in which he reaches the following conclusions. Alquié's operation was the foundation of all the operative procedures since devised for the correction of retrodeviations. The operation of shortening the round ligaments is the most rational treatment of those conditions. The operation of Alquié-Alexander-Adams or ligamentous hysterectomy by the inguinal route, is inferior to no other from the point of view of anatomy and physiology. The abdominal route is of course indispensable if the uterus needs to be directly attacked in the intervention as when adhesions are present. Gilliam's operation should be so modified that the danger of intestinal obstruction as a postoperative complication is removed. The author's modification of the latter answers all the requirements, although in certain cases there is necessary a complemental operation to correct the angulation of the uterus. Operation does not inevitably and unaided remedy the subjective symptoms of the patient. The author has operated many times since 1913 but gives no statistics. His technic for shortening the ligaments and correcting the angulation of the womb is given in much detail being too long to reproduce here.

C. MISCELLANEOUS.

Disappointments after Gastroenterostomy.—B. Moynihan (*Brit. Med. Jour.*, July 12, 1919, 33) says that disappointments after gastroenterostomy may occur when the operation has been performed in the absence of any organic lesion justifying it, either in cases of functional gastric disorder or in cases of chronic disease elsewhere. The latter include chronic appendicitis, tuberculous disease of the intestine, cholelithiasis, carcinoma of the gall-bladder, cirrhosis of the liver with hemorrhage, splenic anemia, tabes dorsalis, disseminated sclerosis, vomiting of pregnancy, lead poisoning, prolapse of the kidney, colic adhesions, and epigastric hernia. A second cause of disappointment is that the operation has been incomplete. Also the operation may have been performed, rightly or wrongly, and certain technical errors cause distressing symptoms—pain, vomiting, diarrhea, etc. The chief of these occur when—(1) The anterior or the posterior operation has been performed, and a long jejunal loop has been left, which may, with difficulty, be emptied and an obstruction may develop at the afferent opening into the stomach. (2) With a short or a long loop, the efferent piece of jejunum has been blocked as a consequence of a kink, or from adhesions, between the intestine on the one side, and the abdominal wall, omentum, transverse colon or mesocolon, and loops of small intestine on the other. Regurgitation occurs here also. (3) A short-loop posterior gastroenterostomy has been performed. At the time when the jejunum was lifted up to oppose to the stomach before suture, adhesions were found binding it to the under surface of the transverse mesocolon, an exaggeration of the ligament of Treitz. These were divided and a raw surface left on the jejunum, proximal to the opening made to anastomose with the stomach. Adhesions then formed and caused obstruction of the proximal part of the jejunum between the duodeno-jejunal flexure, and the opening into the stomach. (4) The jejunum has been rotated round its longitudinal axis at the time when it has been approximated to the stomach. This twist may be quite enough to cause an obstruction. (5) The opening is too small. (6) The opening is badly placed. The opening should always reach the greater curvature and is best placed in line with the esophagus. (7) There has occurred a hernia of the small intestine through the unclosed rent in the mesocolon. The edges of the mesocolic opening should be sutured either to the stomach or to the suture line. (8) The use of unabsorbable sutures—silk, linen, thread, thick chromicized catgut. Catgut is to be preferred to any other suture material. It remains long enough to ensure firm union between the viscera, and disappears in a few weeks' time. It should be as fine as is compatible with adequate strength. (9) Ventral hernia may follow an imperfect closure of the abdominal wound; or after any closure there may be persistent severe coughing or vomiting. Late complications may develop after an operation performed in a case requiring it, without any technical flow. These include jejunal ulcer and carcinomatous change in a chronic gastric ulcer. The symptoms present in cases of unsuccessful gastro-enterostomy are chiefly four—pain, vomiting, hemorrhage, diarrhea.

Pain may be due to: a revival of activity in an unhealed ulcer; the presence of a jejunal ulcer; adhesions crippling the proper action of the stomach or jejunum; or the presence of some other disease which has been overlooked at the operation—chronic appendicitis, cholelithiasis, and the other diseases enumerated above. *Hemorrhage* may be due to: the separation of a suture; continuing activity in a duodenal or gastric ulcer; a jejunal ulcer; or the presence of some other disease which has been overlooked, such as splenic anemia, cirrhosis of the liver, etc. *Vomiting* may be due to: obstruction as a result of technical defects in the operation or to functional causes. *Diarrhea* may be due to: too rapid emptying of the stomach; some pathological condition of the intestine, or other viscera, which has been overlooked; or the offensive character of the escaping contents.

Early Diagnosis of Intestinal Obstruction.—R. Warren (*Practitioner*, 1919, ciii, 182) says that the pain resembles that of simple intestinal colic but is usually less severe. Perhaps the most characteristic features are inability to pass flatus and constipation. Constipation as generally understood, is a sign of little moment; the lower bowel may be, and often is, emptied of feces after obstruction has occurred. Vomiting is a well-understood sign, viz., initial vomiting of gastric contents followed by a green, bilious vomit, which, in turn (in twenty-four to forty-eight hours), is succeeded by a thin brown, practically inoffensive smelling vomit, which later becomes fecal. We must never wait for the onset of fecal vomiting before diagnosing intestinal obstruction. As a rule, both in cases of obstruction from causes inside the abdomen, as in strangulated external hernia, the amount of shock is slight at the onset, the pulse and color are good. In most cases, by the time there is a well-marked shock, or rather collapse, the patient is in a bad way, and we must not regard severe shock as a sign for diagnosis, but rather an indication for making a less favorable post-operative prognosis. The minor manifestations of shock should be carefully noted, viz., increased and increasing rapidity of the pulse, an anxious and hollow-eyed face (abdominal facies), thirst, dry tongue, and subnormal temperature; for these are very characteristic of obstruction, especially the facies and subnormal temperature. In a large number of early cases, examination of the abdomen reveals practically nothing, yet the negative evidence may be most valuable. A soft, flaccid and even hollow abdomen, which is not the least tender, is quite compatible with a severe condition of intestinal obstruction. Unlike peritonitis, the abdominal respiratory movements are not impaired in obstruction, except when distention is very great, as in volvulus or in the later stages when terminal peritonitis has begun. Distention is never very evident in the early stages except in the case of volvulus. Distention may be general or local. General distention with gas or fluid feces, must be distinguished from natural obesity and flatulence. Local distention is a sign of the greatest value when present, but is not common. Visible peristalsis is not an early sign and is practically found only in cases with a gradual onset. Of swellings other than those due to distended gut the only sort at all common is intussusception, the elongate sausage-shape of which is readily noted when the abdomen is soft and not distended. Most important is it when examining the abdomen to note the condtiion of the hernial, especially the femoral, rings. In fat women, small femoral hernias readily escape notice. Examination of the rectum should never be omitted. It may reveal stenosis, usually malignant, of the rectum. Intussusception, when far advanced down the colon, may be felt, as well as impacted masses of feces. Finally, the presence of blood and mucus without feces on the examining finger will strongly indicate intussusception, while blood alone will suggest thrombosis of the mesenteric vessels.

INDEX.

A

Abdominal pregnancy continuing four months after uterine perforation. Bishkow ... 393
  surgery under local anesthesia. Farr ... 612
Accidental hemorrhage. Smyly ... 485
Acidotic state of normal new-born. Scham ... 395
Acute hematogenous streptococcic peritonitis. Rabinowitz ... 246
Adenomyomata containing uterine mucosa, distribution of. Cullen ... 130
Adjuncts which promote efficiency in the use of local anesthesia. Farr ... 653
Administration of the obstetric nursery. Morgenthaler ... 186
Advantages of nitrous oxid-oxygen in labor. Turner ... 670
  of vaginal route in resection of rectum for cancer. Darnall ... 248
Alternating periodic ovarian swellings. Ries ... 490
Amniotic hydrorrhea with expulsion of an extramembranous fetus 103 days after rupture of membranes. Weymeersch ... 484
Analgesia, postoperative. Van Hoosen ... 677
Analysis of the signs and symptoms of early ectopic pregnancy. Heaney. 17
An appeal for human embryological material. Graves ... 616
Announcement ... 617
Applegate. The indications for Cesarean section based on an analysis of a series of ninety-five operated cases ... 167, 225
Are we justified in removing a comparatively healthy gall-bladder? Magie ... 245
Aspiration and pressure treatment of unopened mammary abscesses. Gardiner ... 506

B

Bailey. Further observations on the radium treatment of uterine cancer. 300, 377
Barrage, surgical. Moots ... 661
Barrows. Solitary ulcer of bladder ... 83
Better methods in the immediate attentions to the new-born. Arnold ... 786
Bill. Observations on the problem of hemorrhage in obstetrical cases 708, 760
Birth statistics ... 108
Bishop. Unusual pelvic tumor, with *x*-ray findings ... 777
Bissell. Associated extra- and intrauterine pregnancy ... 763
Bladder function. Curtis ... 400
Blood transfusions in blood-stream infections. Polak ... 291
Boxing the pelvic compass. Adeodato ... 802

Boyd. Some remarks on inversion of the uterus with the report of a case of sixteen months' standing. Boyd........................ 161, 223

Brodhead. Pregnancy complicated by fibroid with normal delivery and subsequent myomectomy.................................... 216

Buettner. Safety factors in the team work of operator and anesthetist 646, 741

C

Cancer of the rectum; the choice of operation. Back.................. 615

Can labor be facilitated by a specific diet of the mother during pregnancy? Ehrenfest.. 441

Care of the bowels during the puerperal period. McPherson............ 698

Case of extramembranous pregnancy. Gonnet........................ 102

  of gastroschisis, a. Schenck.................................. 38

  of single amnion twin pregnancy. Eastman...................... 343

Casler. A unique diffuse uterine tumor, really an adenomyoma with stroma but no glands; menstruation after complete hysterectomy, due to uterine mucosa in remaining ovary.......................... 363

Cerebral hemorrhage of the new-born. Warwick....................... 485

Cervix, resection of the middle portion of the. Noble................. 409

Cesarean section, delivery by the natural passages following Cesarean section. Williams.. 435

  following a previous extraperitoneal Cesarean section. Markoe...... 393

  for hemorrhage from vaginal varices. Brunner.................... 98

Child. Coexistent disease of the appendix and pelvic organs in the female... 31, 219

Childbirth. Kane.. 607

Chronic inversion of the uterus treated by the Kuestner-Piccoli operation. Motta... 614

Climacteric hypertension. Hopkins................................ 396

Clinical study of ectopic pregnancy. Hellier........................ 97

  in preoperative and postoperative blood pressures. Polak.......... 113

Conduct of labor and puerperal sepsis. Brock....................... 609

Consideration of uterine myomata. Montgomery...................... 256

Continued high mortality of child-bearing. Bonney.................. 393

Contributions of William Smellie to obstetrics. Thoms............... 150

Control of venereal disease in detention homes. Findley.............. 623

Corpus luteum extract in vomiting of pregnancy. Quigley.......... 183, 785

Cullen. The distribution of adenomyomata containing uterine mucosa... 130

Curtis. A study of bladder function................................ 364

Cystic ovary, the. Reder.. 719

  teratoma of the ovary, with carcinoma. Spalding.................. 401

D

Davis. Elective Cesarean section.................................. 385

  Obstetric surgery... 122

  Prophylaxis of gestation................................... 682, 745

  The nourishment of the pregnant woman...................... 23, 75

Deep epigastric artery, rupture of the. Schumann.................... 432

Delivery by the natural passages following Cesarean section. Williams... 435
Dental conditions at an antenatal clinic. Ballantyne.................. 610
Detention and treatment of infected women as a measure of control of venereal diseases. Draper.................................. 642
home for women, report of the work of. Findley................. 421
Diet of the mother during pregnancy. Ehrenfest...................... 441
Disappointments after gastroenterostomy. Moynihan................. 804
Disease of the appendix and pelvic organs in the female. Child......... 31
Diseases of the gall-bladder, incidence of malignancy in. Erdmann...... 618
Distribution of adenomyomata containing uterine mucosa. Cullen...... 130
Double uterus: pregnancy in one-half, hematometra in the other half. Esquerdo... ... 791
Draper. The detention and treatment of infected women as a measure of control of venereal diseases in extracantonment zones......... 642, 726
Dynamics of abdominal herniæ, the. Frick.......................... 104

E

Early diagnosis of intestinal obstruction. Warren.................... 805
ovum in situ, in the act of aborting. Williams.................. 269
Eastman. A case of single amnion twin pregnancy................... 343
Eclampsia: its prevention and treatment. Smith....................... 609
Edema and rigidity of the cervix during labor. Coinaud.............. 605
Effect of high carbohydrate feeding on nausea and vomiting of pregnancy. Duncan and Harding.. 242
Ehrenfest. Can labor be facilitated by a specific diet of the mother during pregnancy?... 441
Endometrium, physiology and pathology of the. Strong.............. 139
Enterostomy as an emergency measure in treatment of intestinal obstruction in cases of general peritonitis following purulent appendicitis. Hageboeck and Kornder................................ 104
Episeotomy. Child.. 486
Erdmann. Incidence of malignancy in diseases of the gall-bladder....... 618
Experimental reproduction of premature separation of the placenta. Morse... 283
study of abdominal adhesions. Behrend and Rothschild........... 490
Extra tag on the abdominal sponge. Masson........................ 245

F

Farr. Some adjuncts which promote efficiency in the use of local anesthesia.. 653, 741
Fetal and maternal athyrosis. Smith............................... 792
Fetus, nutrition of the. Slemons.................................. 194
Findley. A report of the work of the detention home for women..... 421, 475
Control of venereal disease in detention homes for women in times of war and peace.................................... 623, 726
Foote. Legislative measures against maternal and infant mortality: the midwife practice laws of the states and territories of the United States.. 534

Formation of single-ovum twins. Streeter.......................... 606
Freeman. A new method of applying heat to patients in surgical shock.. 561
Freshly delivered women, tolerance of to excessive loss of blood. Williams. 1
Full-term ectopic pregnancy, report of a case of. Rawls................ 53
Functions of the internal secretion of the placenta. Hammett.......... 793

G

Gardiner. Aspiration and pressure treatment of unopened mammary abscesses (puerperal) with a report of eight cases................ 506
Geist. Hydatidiform mole associated with pernicious vomiting.......... 215
Gestational phlebitis. Remy.. 786
Glycosuria in pregnancy. Cameron.................................... 607
Goffe. The origin of the intrapelvic treatment of the stump after supravaginal hysterectomy for fibroid tumor of the uterus............. 348
Goodman. Prenatal care... 689, 745
Grad. A rubber laparotomy pad.. 771
Graves. Ovarian residue.. 381
Gynecological pelvic drainage. Bovée................................. 104
Gynecology as a specialty. Martin.................................... 249

H

Harrar. Median episiotomy in primiparous labors.................. 705, 754
Heaney. An analysis of the signs and symptoms of early ectopic pregnancy.. 17, 61
Hematosalpinx from congenital malformation. Fogt..................... 803
Hernia of the ovary into the vagina through a colpotomy wound. Rouffart. 495
High Cesarean section. Bar... 489
Hirst. The necessity for coöperative work in the care of the pregnant poor of a large city.. 73
Holden. Are the operative procedures done for dysmenorrhea and sterility justifiable in the light of developmental study?........ 415, 471
Huggins. Toxic effect of fibroid tumors of the uterus................ 345
Humpstone. Four months' pregnancy in a rudimentary horn of the uterus with rupture... 229
Hydramnios with rapid progress augmenting after death of fetus. Balard 482
Hypophysis in the treatment of diseases of women. Dalché............ 398
Hysterectomy of the gravid uterus. Lecocq............................ 790

I

Incidence of malignancy in diseases of the gall-bladder. Erdmann....... 618
Indications for Cesarean section. Applegate.......................... 167
  for medical abortion at the gynecological clinic, Geneva, during 1894–1918. Henneberg.. 785
Induction of labor by modified Champetier De Ribes bags. Maxwell.... 497
Inflammatory adnexopelvic lesions of influenza. Cantoni.............. 798
Influence of influenza on menstruation, pregnancy and the puerperium. Calderon... 788

Infusion of the placenta as aid to manual extraction. Frey-Bolli........ 101
Ingraham. New form of obstetrical delivery table........................ 46
International conference of women physicians and convention of delegates from national women's organizations........................ 565
Interstitial pregnancy. Vaudescal........................ 787
Intestinal obstruction. L. G. Dragstedt, C. A. Dragstedt, McClintock and Chase........................ 495
Intraperitoneal rupture of the bladder during the puerperium. Kohlmann. 486
Inversion of the uterus. Yates........................ 712

J

Jacobi, Abraham, in memoriam........................ 563

K

Kelly. The treatment of papillary tumors of the bladder in women.. 328, 380
King. Pseudomyxoma peritoneii........................ 426, 476
Kosmak. The treatment of certain cases of placenta previa by conservative measures........................ 472
Koster. An operation for the restoration of the rectovaginal septum..... 173
Kreutzmann. Is it possible through coöperation of surgery and röntgenization in the treatment of fibromyoma uteri to further improve the results obtained by surgery?........................ 179

L

Labor, induction of by modified Champetier De Ribes bags. Maxwell... 497
Lactose, fat and protein content of women's milk. Denis and Talbot... 615
Large subserous tubal cyst causing trifle torsion and gangrene of the tube. Oginz........................ 558
Larson. Prenatal care propaganda........................ 335
Legislative measures against maternal and infant mortality. Foote...... 534
Ligamentous hysteropexy in retrodeviations of the uterus............... 803
Lindeman. Chronic trigonitis in the female and a new method of treatment........................ 87
Lynch. The pelvic articulations during pregnancy, labor and the puerperium; an *x*-ray study........................ 370

M

McGlinn. Venereal infections in the United States navy.............. 475
McKesson. Surgical barrage........................ 661, 741
McLaughlin. Pioneering in venereal disease control................ 636, 726
McPherson. The care of the bowels during the puerperal period; a further report........................ 698, 745
Malta fever and the female genitals. Emilio........................ 100
Manton. The ubiquitous hairpin as a foreign body in the female bladder, with the history of an unusual case........................ 262, 364
Martin. Gynecology as a specialty........................ 249

Maternal and infant mortality. Foote........ 534
welfare work in France to continue........ 499
Maxwell. Induction of labor by modified Champetier De Ribes bags.... 497
Median episiotomy in primiparous labors. Hauar........ 705
Method of delivering the placenta. Baer........ 242
of placing sutures in immediate repair of the perineum. Porter..... 701
Missed abortion. Marmus........ 239
Modified technic of Watkins interposition operation designed to permit child-bearing without complications. Hirst........ 399
Montgomery. A consideration of uterine myomata, with some of the complications seen in practice........ 256, 353
Moots. Surgical barrage........ 661, 741
Morgenthaler. Administration of the obstetric nursery........ 186, 230
The Brooklyn nursery identification necklace........ 776
Morse. Experimental reproduction of premature separation of the placenta........ 283, 368
Motherhood. Lobenstine........ 240

N

New form of obstetrical delivery table. Ingraham........ 46
method of applying heat to patients in surgical shock. Freeman.... 561
Newer methods of Cesarean section. DeLee........ 485
Newman. The relation of preventive medicine to gynecology........ 477
The specialty of obstetrics. Present status, possibilities and importance........ 464
Nitrous oxid-oxygen in labor, advantages of. Turner........ 670
Niwase. Position of the navel of man........ 49
Noble. Resection of the middle portion of the cervix for hypertrophic elongation of the cervix uteri. Shortening of the uterosacral ligaments through the vagina........ 409
Nonpuerperal abscess of the ovary. Chomé........ 492
Nourishment of the pregnant woman. Davis........ 23
Nutrition of the fetus. Slemons........ 194

O

Oastler. The successful treatment of a case of toxemia of pregnancy..... 55
Observations on the problem of hemorrhage in obstetrical cases. Bill.... 708
on the radium treatment of uterine cancer. Bailey........ 300
Obstetric nursery, administration of the. Morgenthaler........ 186
surgery. Davis........ 122
Obstetrical delivery table, new form of. Ingraham........ 46
Obstetrics, the specialty of. Newman........ 464
Occurrence of new-growths in the abdominal wall after laparotomy. Balfour........ 493
Officers for the year 1919–1920........ 48c
Oginz. A large subserous tubal cyst causing triple torsion and gangrene of the tube, simulating an ovarian cyst with a twisted pedicle..... 558
On pregnancy serum. Kottman........ 97

Operative procedures done for dysmenorrhea and sterility. Holden...... 415
Ovary, cystic teratoma of the, with carcinoma. Spalding.............. 401

P

Pandemic of influenza at the Larnier Clinique, the. Pellisier............ 790
Papillary tumors of the bladder, treatment of in women. Kelly......... 328
Parallel between puerperal and certain kinds of surgical infection. Wallich 99
Pathological and clinical points of interest. Robinson.................. 551
Perforated gastric and duodenal ulcers. Richter....................... 246
Permanent colostomies. Sistrunk.................................... 105
Peterson. Age distribution and age incidence in 500 cases of carcinoma of the uterus... 375
Pierce. The value of detention as a reconstruction measure......... 624, 726
Pioneering in venereal disease control. McLaughlin.................... 636
Pituitrin in inducing labor. Stein..................................... 470
Polak. A clinical study in preoperative and postoperative blood pressures and their relation to renal function and in shock and hemorrhage.. 113
  A preliminary note on the value of repeated small blood transfusions in blood-stream infections................................ 291, 373
  Two cases of carcinoma of the retained cervix years after supracervical hysterectomy.. 766
Porter. A method of placing sutures in immediate repair of the perineum.. 701, 754
Position of the navel of man. Niwase.................................. 49
Postoperative analgesia. Van Hoosen................................ 677
Practical points and common errors in treatment of sterility. Reynolds.. 799
Pregnancy complicated by epidemic influenza. Litus and Jamison....... 244
  and labor following amputation of cervix uteri. Pavlik............ 487
Pregnant woman, the nourishment of the. Davis....................... 23
Premature separation of the placenta. Appleton...................... 394
  separation of the placenta, experimental reproduction of. Morse.... 283
Prenatal care. Goodman... 689
  propaganda. Larson.. 335
Preoperative and postoperative blood pressures, clinical study in. Polak. 113
Present aspects of endocrinology. Lescohier........................... 794
Prevention of sterility in young women when operating for tuberculous peritonitis. Carstens.. 399
Prolonged placental retention. Lecéne and Promsy..................... 791
Prophylaxis of gestation. Davis....................................... 682
Protecting the third line of defense, our babies. Stewart-Cogill......... 615
Pseudomyxoma peritoneii. King....................................... 426
Puerperal infection: its relation to polypoid decidual endometritis. Mynlasy.. 611
Pulmonary form of influenza and gestation. Anderodias............... 604

Q

Quigley. Corpus luteum extract in vomiting of pregnancy, with report of cases.. 183

R

Radical cure of femoral hernia by the inguinal route. Cole............ 398
    of pelvic deformity. Jellett............ 487
Radium in gynecology. Rouffart............ 793
    treatment of uterine cancer. Bailey............ 300
Rawls. Report of a case of full-term ectopic pregnancy............ 53, 59
Reconstruction of the uterus. Robins............ 103
Recovery in a case of purulent general peritonitis due to a provoked abortion. Aubert............ 483
Reder. The cystic ovary............ 719, 763
Renal decapsulation in eclampsia. Jullien............ 240
    infections associated with pregnancy. Parmenter............ 244
Report of a case of full-term ectopic pregnancy. Rawls............ 53
    of the ninth annual meeting of the American Association for Study and Prevention of Infant Mortality............ 600
    of the work of the detention home for women. Findley............ 421
Resection of the middle portion of the cervix. Noble............ 409
Restoration of the rectovaginal septum, operation for the. Koster............ 173
Results obtained by surgery. Kreutzmann............ 179
    to be expected from antenatal care. Holland............ 610
Reviews: Bell. The pituitary............ 597
    Best. The blind............ 92
    Davis. Plastic surgery............ 601, 778
    DeCotret. Suites de couches normales et pathologiques............ 782
    Hertzler. The peritoneum............ 595
    Hirst. A manual of gynecology............ 91
    International medical annual............ 601, 778
    Johns Hopkins Hospital reports............ 92
    Leavitt. Operations of obstetrics............ 91
    Pottenger. Symptoms of visceral disease............ 600, 779
    Stewart. A manual of physiology with practical exercises............ 780
Ritter. Why prenatal care?............ 523
Robinson. A report of three cases presenting unusual pathological and clinical points of interest............ 551
Rupture of the deep epigastric artery. Schumann............ 432

S

Sacral suspension of the uterus for relief of pathological mechanical retroversion and descensus. Young............ 798
Safety factors in the team work of operator and anesthetist. Buettner... 646
Schenck. A case of gastroschisis, perforate diaphragm, anorchidy, cloaca, absence of colon and rectum, imperforate anus, spina bifida, spinal scoliosis, sacral lordosis and split pelvis............ 38
Schumann. Osteomalacia in an antelope............ 223
    Rupture of the deep epigastric artery as a clinical entity, with an analysis of a case............ 432, 479
Secondary syphilis of the uterus. Gellhorn............ 803
Signs and symptoms of early ectopic pregnancy. Heaney............ 17
Slemons. The nutrition of the fetus............ 194, 368

Some adjuncts which promote efficiency in the use of local anesthesia. Farr........ 653
  remarks on inversion of the uterus. Boyd........ 161
Spalding. A study of frozen sections of the pelvis with description of an operation for pelvic prolapse........ 356
  Cystic teratoma of the ovary, with carcinoma........ 401
Special supports of the uterus, the. Dixon........ 102
Specialty of obstetrics, present status, possibilities and importance. Newman........ 464
Speculations regarding the nature of cancer. Benedict........ 396
Spina bifida with associated disturbances in a human embryo 17 mm. long. Cull........ 243
Spontaneous expulsion of gauze sponge from the urinary bladder. Lea Roque........ 104
  rupture of the uterus: abdominal Cesarean section and hysterectomy. Larosa and San Martin........ 789
Stein. On the use of very small dosages of pituitrin in inducing labor at term in combination with nitrous oxide anesthesia to alleviate the labor pains........ 470
Sterility. Gelser........ 105
  and dysmenorrhea. Holden........ 415
Strong. Carcinoma of the ovary in a girl of twenty........ 218
  Physiology and pathology of the endometrium........ 139
  Sarcoma botryoides........ 771
Sturmdorf. Gyneplastic technology........ 234
Subserous tubal cyst causing triple torsion and gangrene of the tube. Oginz........ 558
Sub-total hysterectomy. Murphy........ 801
Surface temperature in the diagnosis of surgical abdominal conditions. Alexander........ 247
Surgical shock, new method of applying heat to patients in. Freeman... 561

T

Technic for bloodless hysterectomy. Van Hoosen........ 493
Temporary sterilization. Tureune........ 789
Thewlis. Geriatrics........ 601, 779
Thoms. The contributions of William Smellie to obstetrics........ 150
Tolerance of freshly delivered women to excessive loss of blood, the. Williams........ 1
Tracy. Unusual specimen of fibroid of the uterus and also part of a needle which had been in the perineum for twelve years........ 73
Transmission of malaria from mother to fetus. Gentili........ 100
Treatment of extrauterine pregnancy after the fifth month. Beck....... 788
  of infections of the uterus and cervix. Langstroth........ 397
  of myoma uteri with radium. Clark........ 796
  of severe vomitings of early pregnancy. Lynch........ 608
  of unopened mammary abscesses. Gardiner........ 506
  of urinary disturbances with electricity. Hernaman-Johnson........ 103
  of uterine cancer by radium. Janeway........ 797
  myoma. Stein........ 492

- Trendelenburg anesthesia in surgery of the pelvis. Guthrie............. 613
- Tuberculosis of the cervix uteri. Moore............................. 489
- Turner. The advantages of nitrous oxid-oxygen in labor............ 670, 741
- Twenty-four cases of breech presentation. Remy...................... 239
- “Twilight sleep” in general practice. Winch......................... 792
- Two forms of anomalous pregnancy, interstitial and angular. Vandescal. 606

U

- Ubiquitous hairpin as a foreign body. Manton........................ 262
- Ultimate fate of pregnant women with cardiac, pulmonary and renal disease. Hüssy.. 484
- Urologic aspects of dermoid cysts. Quinby........................... 802
- Use of benzyl benzoate in dysmenorrhea. Litzenberg.................. 613
  - of radium in fifty cases of uterine hemorrhage. Clark............. 795
  - of very small dosages of pituitrin in inducing labor at term. Stein... 470
- Uterine dyspepsia. Moorhead... 794
  - myomata, a consideration of. Montgomery........................... 256

V

- Vaginal septum, operation for the restoration of. Koster............ 173
- Value of detention as a reconstruction measure. Pierce.............. 624
- Van Hoosen. Postoperative analgesia............................ 677, 741
- Venereal disease control, pioneering in. McLaughlin................. 636
  - diseases, detention and treatment of infected women as a measure of control. Draper.. 642
- Vicious insertion of the placenta. de Moraes........................ 98
- Vineberg. Chorioepithelioma, developing five weeks after a hydatidiform mole... 211

W

- Warfare against abortion nonindicated. Meyer-Ruegg.................. 483
- Williams. An early ovum in situ, in the act of aborting......... 269, 367
  - Delivery by the natural passages following Cesarean section....... 435
  - The tolerance of freshly delivered women to excessive loss of blood... 1
- Why prenatal care? Ritter... 523
- Witthaus. Text-book of chemistry, inorganic and organic............. 781

X

- *X*-rays in the treatment of certain forms of dysmenorrhea. Johnson.... 614

Y

- Yates. Inversion of the uterus................................. 712 762

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3 2044 081 507 758